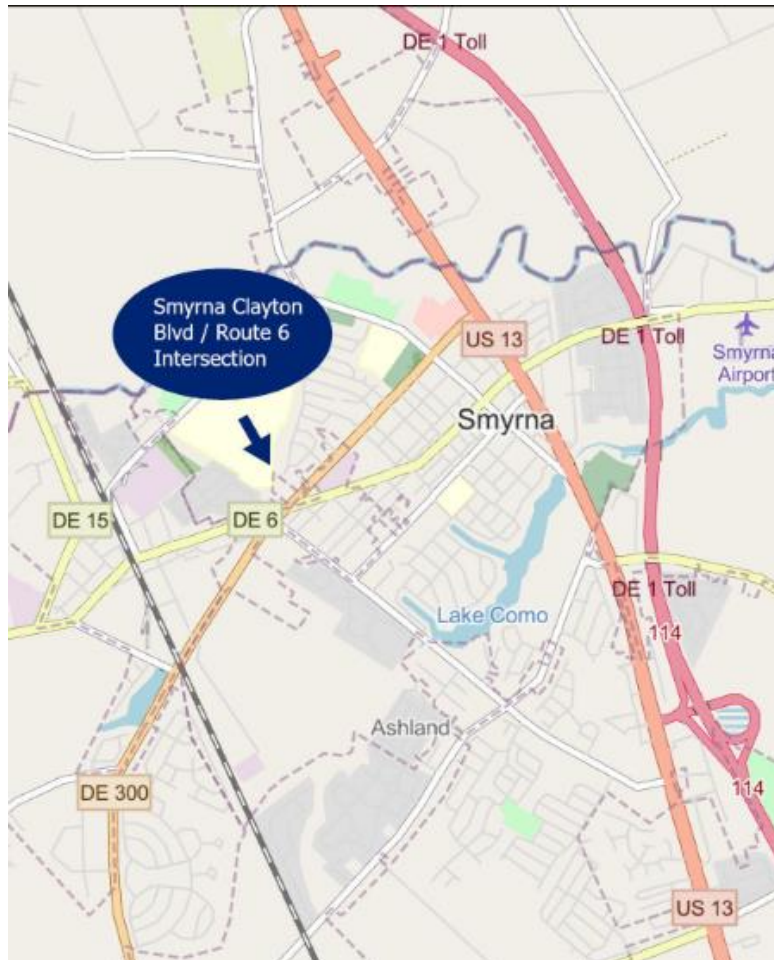


Smyrna Clayton Boulevard Intersection Improvement Study



Prepared for:



Prepared by:



June 2023

Smyrna Clayton Boulevard Intersection Improvement Study

Contents

Executive Summary.....	1
Introduction	3
Study Location and Study Area.....	3
Purpose and Need.....	4
Traffic	4
Existing Traffic	5
Crash Evaluation.....	8
Future Traffic.....	9
Traffic Operational Analysis	11
Community Engagement.....	12
Alternatives Considered.....	14
Recommendations	16
Cost Estimates	19
Appendix A: Traffic Analysis Report.....	20
Appendix B: Workshop 1 Summary Report	21
Appendix C: Workshop 2 Summary Report	22
Appendix D: Concept Option 1 & Concept Option 2	23
Appendix E: Turning Templates – Concept Option 2.....	24
Appendix F: Cost Estimates	25

List of Figures

Figure 1 Study Area.....	3
Figure 2 Intersection.....	4
Figure 3 Am Peak Counts	5
Figure 4 Midday Peak Counts	5
Figure 5 PM Peak Counts	6
Figure 6 AM Truck Percentages	7
Figure 7 Midday Truck Percentages.....	7
Figure 8 PM Truck Percentages	7
Figure 9 Crash Location & Type	8
Figure 10 Annual Crashes.....	9
Figure 11 Time of Day Crashes.....	9

Smyrna Clayton Boulevard Intersection Improvement Study

Figure 12 2022 Traffic Volumes with Option 1 10

Figure 13 2028 Traffic Volumes with Option 1 10

Figure 14 2050 Traffic Volumes with Option 1 10

Figure 15 2022 Traffic Volumes with Option 2 11

Figure 16 2028 Traffic Volumes with Option 2 11

Figure 17 2050 Traffic Volumes with Option 2 11

Figure 18 Concept Option 1 15

Figure 19 Concept Option 2 16

Figure 20 SCB/WPR/CR Intersection 17

Figure 21 SCB/GR Intersection 18

Smyrna Clayton Boulevard Intersection Improvement Study

Executive Summary

The Smyrna Clayton Boulevard Intersection Improvement Study evaluated the Smyrna Clayton Boulevard (DE 6) and Wheatleys Pond Road (DE 300) intersection for existing traffic volumes and a five-year crash evaluation (November 30, 2017, to November 30, 2022). Both DE 6 (Smyrna Clayton Boulevard, W Commerce St, and E Commerce St) and DE 300 (Wheatleys Pond Road, W Glenwood Ave, and E Glenwood Ave) provide access to and from US 13. In addition, Carter Rd, which intersects with Wheatleys Pond Rd, serves as an important connection to and from US 13 as well as SR 1.

The acute angle of the Smyrna Clayton Boulevard and Wheatleys Pond Road intersection inhibits vehicle turning movements at the intersection. It is especially difficult for eastbound vehicles on Smyrna Clayton Boulevard to turn right onto Wheatleys Pond Road. The Town views this intersection as difficult to negotiate and non-conforming and would like the study to develop and evaluate improvement options, including extending Carter Road to Smyrna Clayton Boulevard to allow for a more direct right turn off Smyrna Clayton Boulevard and directly onto Carter Road. Many of the vehicles making this right turn onto Wheatleys Pond Road are then turning left onto Carter Road which provides access to US 13 and SR 1.

The study area is centered around the Smyrna Clayton Boulevard and Wheatleys Pond Road intersection but was extended along both roads to accommodate the conceptual improvement options.

To address this undesirable condition, this study developed and evaluated options to extend Carter Road to Smyrna Clayton Boulevard to allow for a more direct connection between Smyrna Clayton Road and Carter Road, and thereby eliminate right turn movements from Smyrna Clayton Boulevard onto Wheatleys Pond Road.

Traffic analyses were conducted as part of this study and included: evaluations of existing traffic conditions (2022), including AM peak hour, Midday peak hour, and PM peak hour turning movement counts, and AM peak hour, Midday peak hour, and PM peak hour truck percentages; a five-year (November 2017 - November 2022) crash evaluation; future traffic volumes for existing year (2022), projected opening year (2028), and design year (2050) configurations applied to both concept options; and a traffic operational analysis that evaluated Levels of Service (LOS) and delay for existing year, opening year, and design year conditions applied to both concept options.

Crash data for the five-year period from November 30, 2017, through November 30, 2022, was obtained from DeIDOT for the study limits. Thirty-eight (38) total crashes were reported.

Post-pandemic growth factors provided by DeIDOT Planning for proposed projects in north and west Kent County range between 0.75% and 1% per annum. The higher 1% per annum value was used to ensure a conservative approach using and designing for the highest traffic volumes. A total growth of 1.06 and 1.32 were applied to the 2022 traffic volumes to obtain Opening Year (2028) and Design Year (2050) traffic volumes respectively.

Two conceptual improvement options were developed as part of this study, both of which address the severe skew at the Smyrna Clayton Boulevard and Wheatleys Pond Road Intersection. Traffic volumes for exiting year 2022, opening year 2028 and design year 2050 were reassigned to the new intersection configurations in each option.

Smyrna Clayton Boulevard Intersection Improvement Study

Except for the realigned Smyrna Clayton Road/Wheatleys Pond Road/Carter Road under Concept Option 2 design year 2050 traffic conditions, all intersections under Concept Option 1 and Concept Option 2 existing and future intersection conditions operate at LOS D or better for all three peak hours analyzed.

To help improve LOS and delay for the intersection, the eastbound realigned Smyrna Clayton Boulevard and westbound Carter Road approaches were analyzed with exclusive left-turn lanes and shared through/right-turn lanes instead of shared left/through lanes and exclusive right-turn lanes. Under the modified lane configurations (revised Concept Option 2), the intersection of realigned Smyrna Clayton Road/Wheatleys Pond Road/Carter Road would operate at a LOS D (acceptable) under opening year 2050 traffic conditions.

The Smyrna Clayton Boulevard Intersection Improvement Study had a very robust community engagement program that included public workshops, online surveys, and the opportunity for the public to provide their comments, thoughts, and feedback throughout the entire study process, including the recommendations of the study.

Public workshops were held on January 30, 2023, and March 30, 2023, and online surveys ran from January 30, 2023, to February 24, 2023, April 10, 2023, to May 10, 2023, and May 5, 2023, to May 22, 2023. The responses collected on each of those surveys are available in the Workshop Summaries included in [Appendix B](#) and [Appendix C](#) of this report.

Concept Option 1 extends Carter Road through the existing intersection with Wheatleys Pond Road to form a four-way, signalized intersection with Smyrna Clayton Boulevard at the American Legion Ambulance Services driveway. This configuration would eliminate the difficult right turn movement from Smyrna Clayton Boulevard onto Wheatleys Pond Road. The Wheatleys Pond Road and Carter Road intersection would also be a four-way signalized intersection as part of Concept Option 1. The left turn movement from Wheatleys Pond Road onto Smyrna Clayton would also be eliminated as part of Concept Option 1.

Concept Option 2 also extends Carter Road through the existing intersection with Wheatleys Pond Road, but ties into a new sweep section of Smyrna Clayton Boulevard at the border of properties owned by the Town of Smyrna and the State. This option would eliminate a section of Smyrna Clayton Boulevard between the new sweep to approximately the spur road connecting Smyrna Clayton Boulevard and W Glenwood Avenue, including the exiting Smyrna Clayton Boulevard/Wheatleys Pond Road intersection.

While Concept Option 1 improves the Smyrna Clayton Boulevard and Wheatleys Pond Road intersection by eliminating the right turn from the former to the later, Concept Option 2 eliminates and removes the existing Smyrna Clayton Boulevard and Wheatleys Pond Road intersection. Additionally, public feedback received via public workshops and online surveys indicates a clear preference for Concept Option 2.

However, coordination with, and feedback from local emergency responders indicated some concerns with the turning radii at the new intersections (Smyrna Clayton Blvd/Wheatleys Pond Rd/Carter Rd (SCB/WPR/CR) and Smyrna Clayton Blvd/Glenwood Ave (SCB/GR)) associated with Concept Option 2.

Therefore, it is the recommendation of this study that Concept Option 2 be carried forward to the design phase as the preferred alternative. It is further recommended that the radii at both the new Smyrna Clayton Blvd/Wheatleys Pond Rd/Carter Rd intersection and the new Smyrna Clayton Blvd/Glenwood Ave

Smyrna Clayton Boulevard Intersection Improvement Study

intersection be evaluated during the design phase to determine if “flatter” curves can be implemented to better accommodate large tractor-trailer trucks and fire department ladder trucks. It is recommended that coordination with the emergency responders continues during the design phase to ensure their input is considered during design revisions.

The conceptual cost estimate for Concept Option 2 is **\$6,874,000.00***. (*Rounded). Complete conceptual cost estimates for Concept Options 1 and 2 are provided in [Appendix F](#) of this report.

Introduction

The Smyrna Clayton Boulevard Intersection Improvement Study evaluated the Smyrna Clayton Boulevard (DE 6) and Wheatleys Pond Road (DE 300) intersection for existing traffic volumes and a five-year crash evaluation (November 30, 2017, to November 30, 2022). Both DE 6 (Smyrna Clayton Boulevard, W Commerce St, and E Commerce St) and DE 300 (Wheatleys Pond Road, W Glenwood Ave, and E Glenwood Ave) provide access to and from US 13. In addition, Carter Rd intersects with Wheatleys Pond Rd and serves as an important connection to and from US 13 as well as SR 1.

Smyrna Clayton Boulevard and Wheatleys Pond Road intersect at an extremely skewed angle that makes turns difficult for vehicles, especially truck traffic from eastbound Smyrna Clayton Boulevard turning right onto southbound Wheatley's Pond Road. The Town views this intersection as difficult to negotiate and non-conforming and would like the study to develop and evaluate improvement options, including extending Carter Road to Smyrna Clayton Boulevard to allow for a more direct right turn off Smyrna Clayton Boulevard and directly onto Carter Road.

The Walmart Distribution Center is a high-volume truck generator located approximately half a mile south of this intersection on the east side of Wheatleys Pond Road. Smyrna Clayton Boulevard has a functional classification as a major collector and Wheatleys Pond Road's functional classification is a minor arterial.

Study Location and Study Area

The Town of Smyrna is located in Kent County, Delaware about 14 miles north of Dover and 12 miles south of Middletown. SR 1 serves as its eastern border and US 13 extends north/south through the eastern part of Town just west of SR 1. Both



Figure 1 Study Area

US 13 and SR 1 are important links to commerce and the economy of the Town and the region. Both

Smyrna Clayton Boulevard Intersection Improvement Study

roadways are major traffic generators, including large-truck traffic, and must often use local roadways as access to and from US 13 and SR 1. See [Figure 1](#).

The study area is centered around the Smyrna Clayton Boulevard and Wheatleys Pond Road intersection but was extended along both roads to accommodate the conceptual improvement options. See [Figure 2](#).

Purpose and Need

The acute angle of the Smyrna Clayton Boulevard and Wheatleys Pond Road intersection inhibits vehicle turning movements at the intersection. It is especially difficult for eastbound vehicles on Smyrna Clayton Boulevard to turn right onto Wheatleys Pond Road. Many of the vehicles making this right turn onto Wheatleys Pond Road are then turning left on Carter Road which provides access to US 13 and SR 1.

To address this undesirable condition, this study developed and evaluated options to extend Carter



Figure 2 Intersection

Road to Smyrna Clayton Boulevard to allow for a more direct connection between Smyrna Clayton Road and Carter Road, and thereby eliminate right turn movement from Smyrna Clayton Boulevard onto Wheatleys Pond Road.

Traffic

Traffic analyses were conducted as part of this study and included: evaluations of existing traffic conditions (2022), including AM peak hour, Midday peak hour, and PM peak hour turning movement counts, and AM peak hour, Midday peak hour, and PM peak hour truck percentages; a five-year (November 2017 - November 2022) crash evaluation; future traffic volumes for existing year (2022), projected opening year (2028), and design year (2050) configurations applied to both concept options; and a traffic operational analysis that evaluated Levels of Service (LOS) and delay for existing year, opening year, and design year conditions applied to both concept options.

The complete traffic analysis report for this study can be found in [Appendix A](#) of this report.

Smyrna Clayton Boulevard Intersection Improvement Study

Existing Traffic

There are four intersections within the study area. Those intersections are as follows:

- Carter Road at Wheatleys Pond Road Smyrna Clayton Boulevard at Wheatleys Pond Road Spur at Wheatleys Pond Road Spur at Smyrna Clayton Boulevard

Turning movement counts were performed at the intersections on Thursday November 29, 2022, a normal weekday, with all schools operating in-person sessions. The counts were collected to capture the A.M., midday and P.M. peak hours. Separate counts of Trucks / Heavy vehicles were also collected.

Figures 3, 4, and 5 depict AM, Midday, and PM peak hour turning movement counts, respectively.

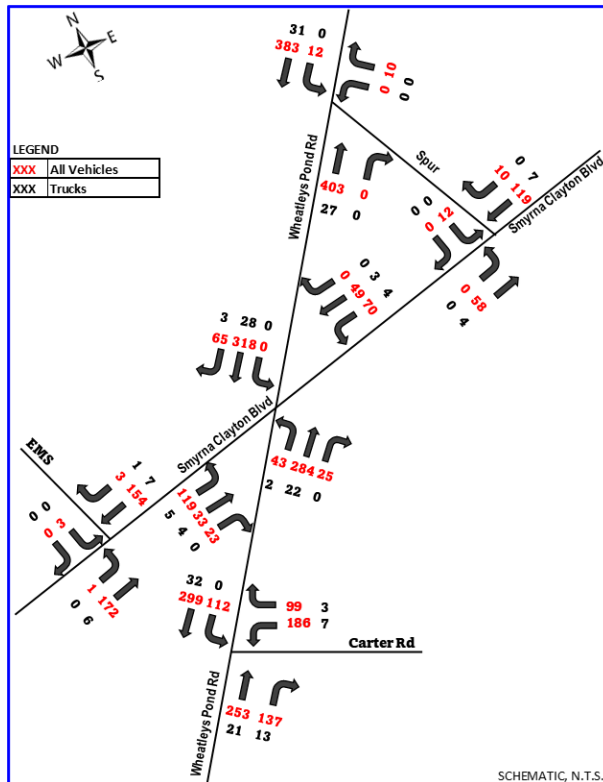


Figure 3 Am Peak Counts

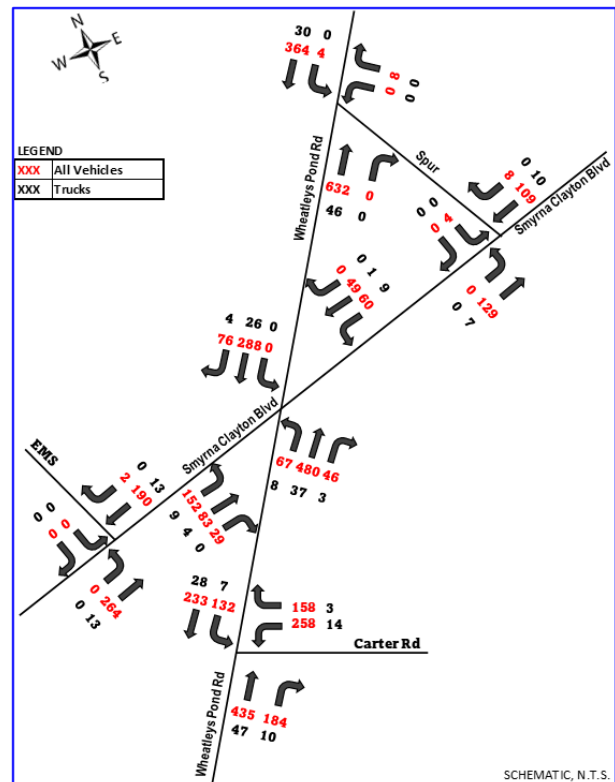


Figure 4 Midday Peak Counts

Smyrna Clayton Boulevard Intersection Improvement Study

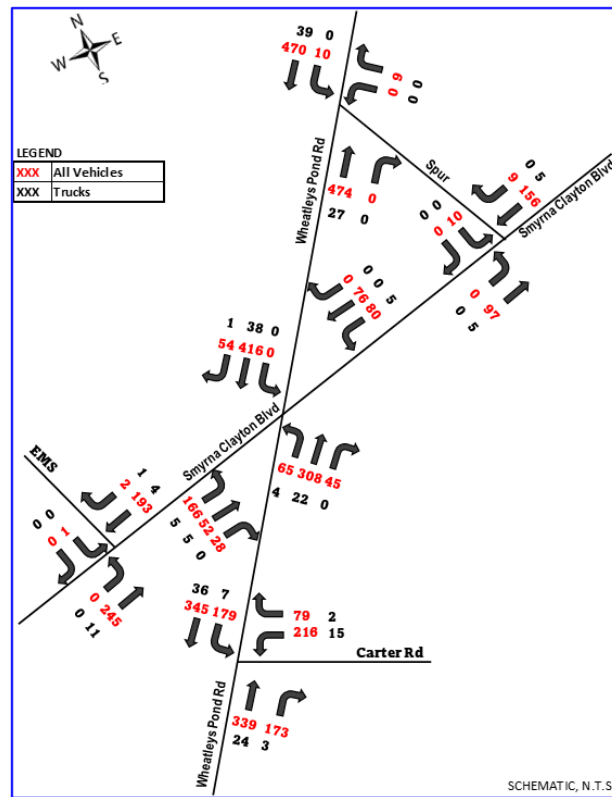


Figure 5 PM Peak Counts

Smyrna Clayton Boulevard Intersection Improvement Study

Figures 6, 7, and 8 depict AM, Midday, and PM peak hour truck percentage counts, respectively.

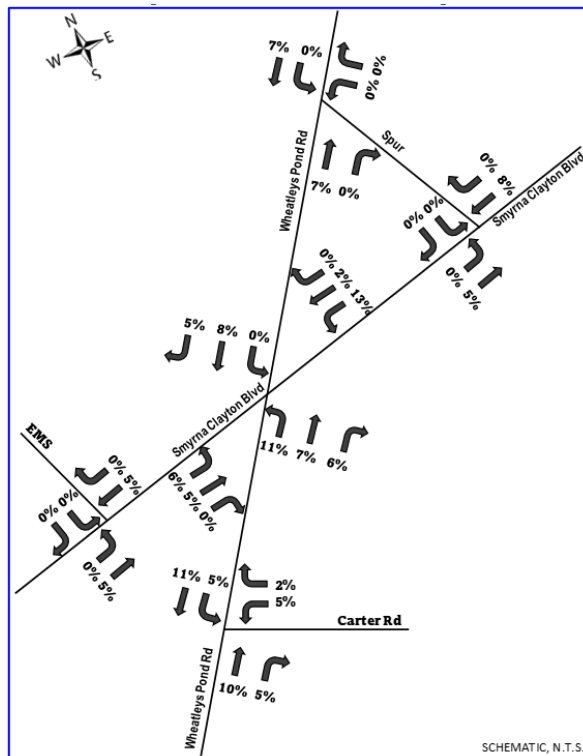


Figure 6 AM Truck Percentages

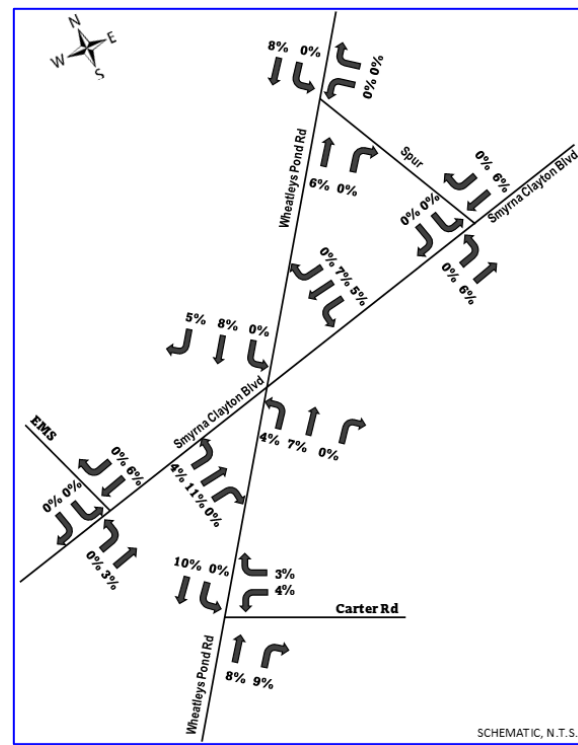


Figure 7 Midday Truck Percentages

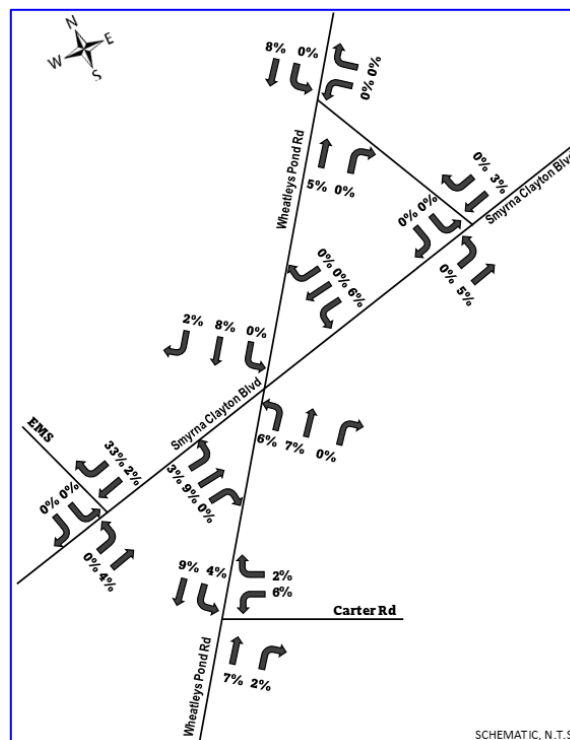


Figure 8 PM Truck Percentages

Smyrna Clayton Boulevard Intersection Improvement Study

Crash Evaluation

Crash data for the five-year period from November 30, 2017, through November 30, 2022, was obtained from DelDOT for the study limits. Thirty-eight (38) total crashes were reported. The approximate crash locations, number, type and severity of crashes are presented in *Figure 9*.

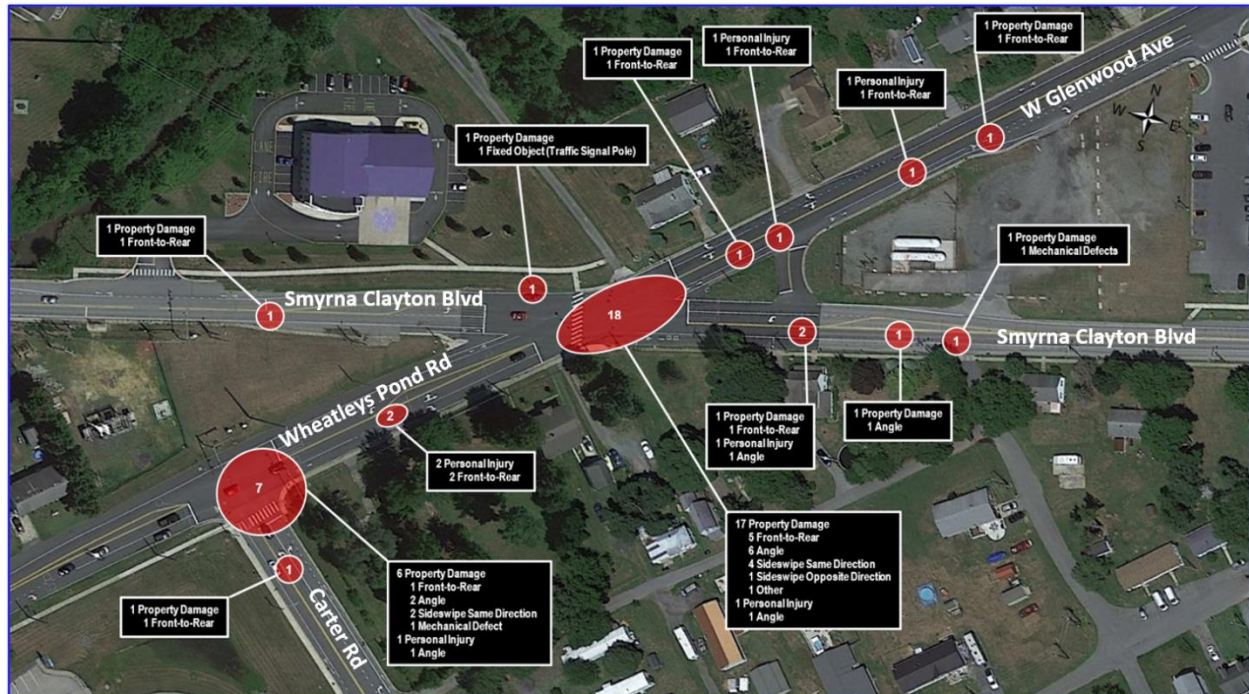
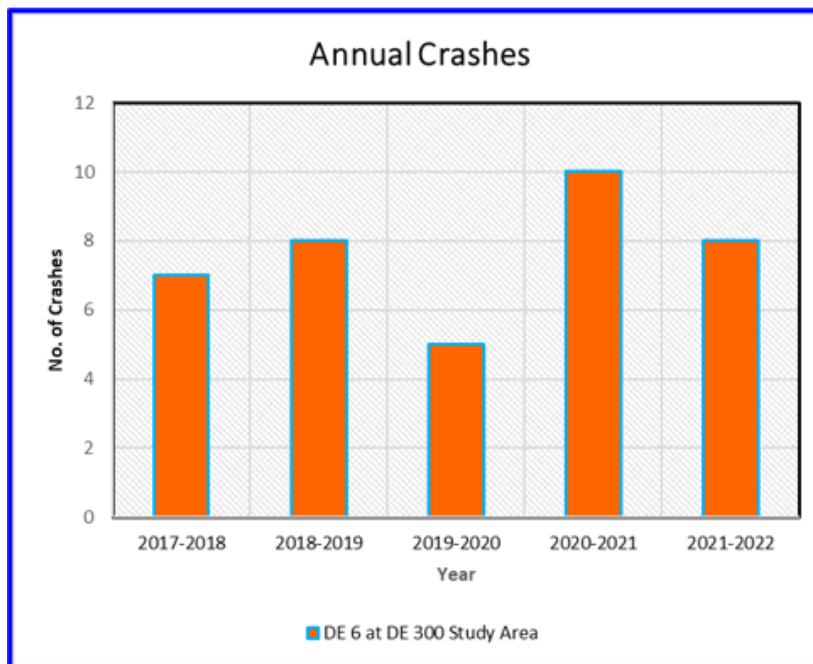


Figure 9 Crash Location & Type

The majority of the crashes within the study limits, twenty-nine (29) or approximately 76.3%, occurred at intersections; nineteen (19) or approximately 50.0% occurred at the skewed intersection of Smyrna Clayton Boulevard and Wheatleys Pond Road; seven (7) or approximately 18.4% occurred at the intersection of Wheatleys Pond Road and Carter Road; two (2) or approximately 5.3% occurred at the intersection of Smyrna Clayton Boulevard and the Spur, and one (1) or approximately 2.6% occurred at the intersection of Wheatleys Pond Road and the Spur. No fatal crashes were reported. Twenty-eight (28) or approximately 73.7% of the reported crashes involved property damage (PD) only, and the remaining fifteen (15) approximately 26.3% involved personal injury (PI).

Figure 10 presents a graphical representation of the annual crashes. As provided in the figure, the highest number of annual crashes, ten (10), was reported during the 2020 – 2021 period. This was double the number of crashes reported in the prior 12-month period, 2019 – 2020. Reported crashes dropped by two to eight (8) during the most recent one-year period from November 2021 to November 2022, an approximately 20% decrease.

Smyrna Clayton Boulevard Intersection Improvement Study



As shown, crashes are not confined to any particular time of day within the study limits. Crashes peak during the noon hour and again during the 5:00 P.M. to 6:00 P.M. time periods. Crashes appear to be higher during the hours of increased traffic activity as is logically expected. See *Figure 11*.

Figure 10 Annual Crashes

Future Traffic

Post-pandemic, growth factors provided by DelDOT Planning for proposed projects in north and west Kent County range between 0.75% and 1% per annum. The higher 1% per annum value was used to ensure a conservative approach using and designing for the highest traffic volumes. A total growth of 1.06 and 1.32 were applied to the 2022 traffic volumes to obtain Opening Year (2028) and Design Year (2050) traffic volumes respectively.

Two conceptual improvement options were developed as part of this study, both of which address the severe skew at the Smyrna Clayton Boulevard and Wheatleys Pond Road Intersection. Traffic volumes for exiting year 2022, opening year 2028 and design year 2050 were reassigned to the new intersection configurations in each option. These volumes are presented in *Figure 12* through *Figure 14* for Concept Option 1, and *Figure 15* through *Figure 17* for Concept Option 2.

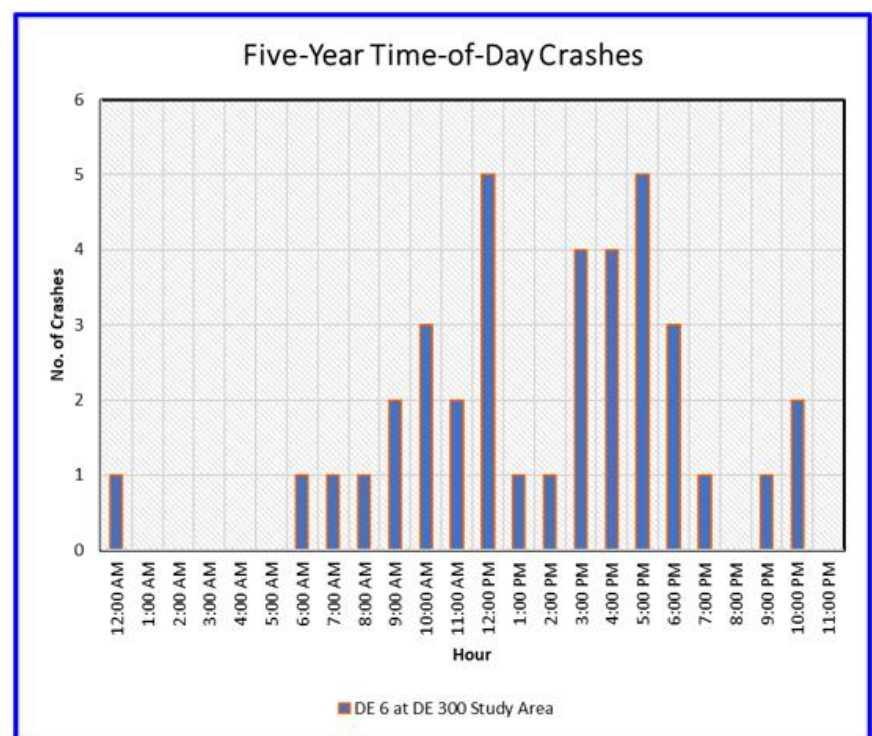


Figure 11 Time of Day Crashes

Smyrna Clayton Boulevard Intersection Improvement Study

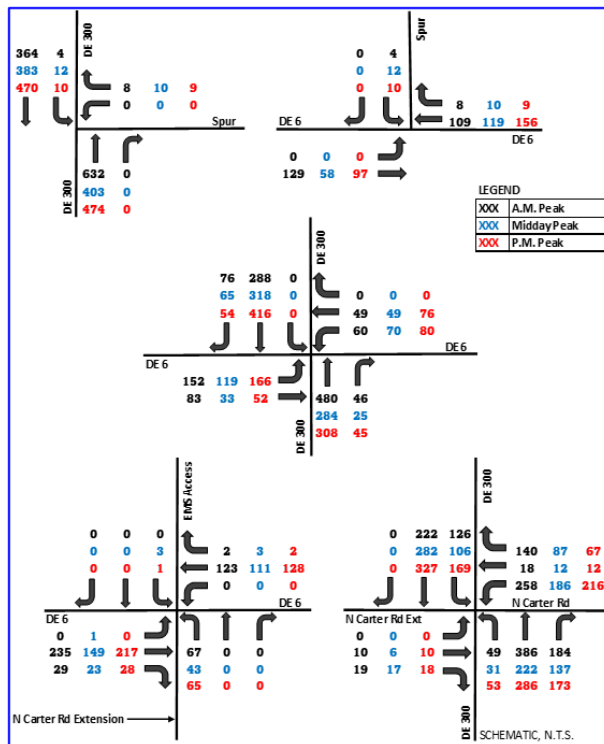


Figure 12 2022 Traffic Volumes with Option 1

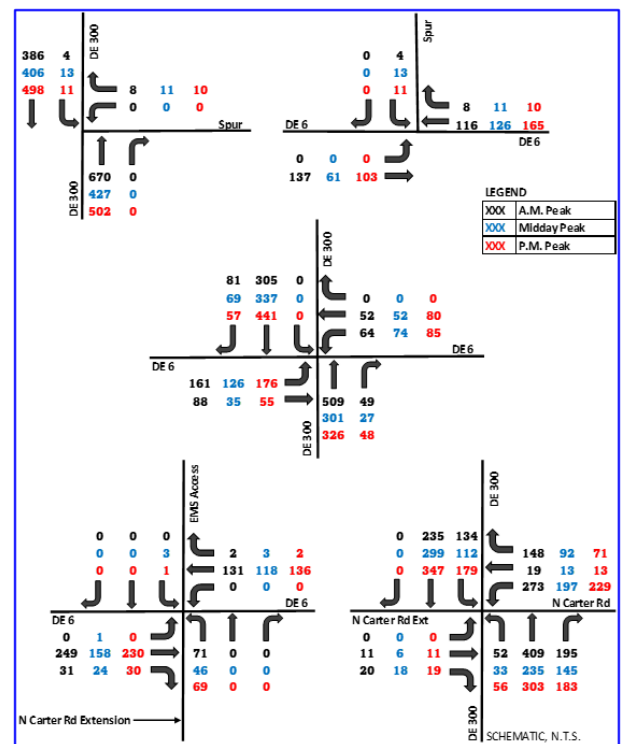


Figure 13 2028 Traffic Volumes with Option 1

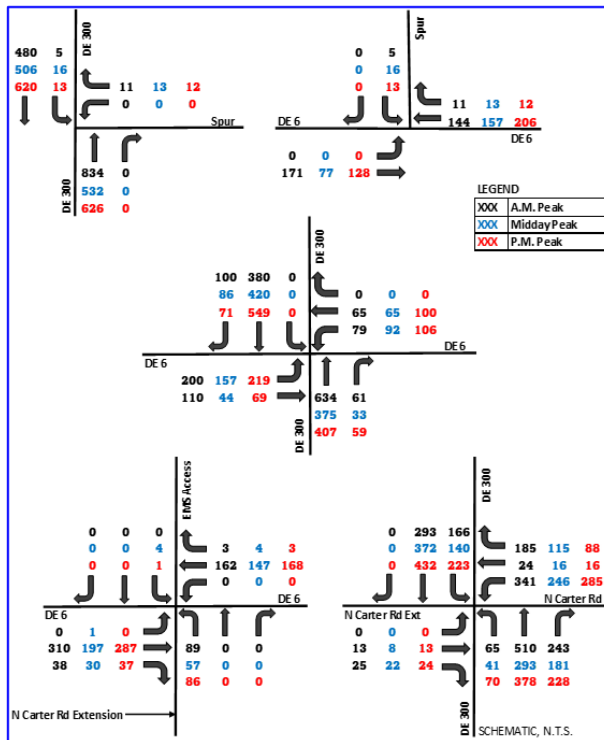


Figure 14 2050 Traffic Volumes with Option 1

Smyrna Clayton Boulevard Intersection Improvement Study

Except for the realigned Smyrna Clayton Road/Wheatleys Pond Road/Carter Road under Concept Option 2 design year 2050 traffic conditions, all intersections under Concept Option 1 and Concept Option 2 existing and future intersection conditions operate at LOS D or better for all three peak hours analyzed.

At the intersection of realigned Smyrna Clayton Road/Wheatleys Pond Road/Carter Road, under Concept Option 2 design year 2050 traffic conditions, the intersection would operate at LOS E with 77.2 seconds delay for the A.M. peak hour and LOS E with delay of 56.7 seconds delay for P.M. peak hour.

To help improve LOS and delay for the intersection, the eastbound realigned Smyrna Clayton Boulevard and westbound Carter Road approaches were analyzed with exclusive left-turn lanes and shared through/right-turn lanes instead of shared left/through lanes and exclusive right-turn lanes. Under the modified lane configurations (revised Concept Option 2), A.M. peak hour LOS and delay for the intersection of realigned Smyrna Clayton Road/Wheatleys Pond Road/Carter Road would operate at a LOS D and 40.6 seconds under opening year 2050 traffic conditions. P.M. peak hour LOS and delay would be D and 35.9 seconds.

Community Engagement

The Smyrna Clayton Boulevard Intersection Improvement Study had a very robust community engagement program that included public workshops, online surveys, and the opportunity for the public to provide their comments, thoughts, and feedback throughout the entire study process, including their input on the recommendations of the study. Additionally, key stakeholders such as emergency service providers were given the opportunity to provide feedback through coordination and meetings. The following provides a summary of the public involvement and outreach that occurred throughout the study and helped guide the development of the conceptual improvement options:

Community Workshop 1

January 30, 2023

- Live
- Citizens Hose Company Banquet Hall, Commerce St, Smyrna
- Study Area
- Purpose and Need
- Workflow
- Turning Movement Counts – AM Peak Hour, Midday Peak Hour, and PM Peak Hour
- Crash Type and Severity (11/30/2017 – 11/30/2022)
- Annual Crashes and Five-Year Time of Day Crashes (11/30/2017 – 11/30/2022)
- Crashes by Location and Type (11/30/2017 – 11/30/2022)
- Schedule
- 26 Attendees
- 8 Comment Forms were Completed and Submitted at the Workshop
- 1 Comment Form was Completed and Mailed to the Town
- 77 Responses received from the online comment form
- See [Appendix B](#) for Workshop 1 Summary Report

Smyrna Clayton Boulevard Intersection Improvement Study

Community Workshop 2

March 30, 2023

- Live
- Citizens Hose Company Banquet Hall, Commerce St, Smyrna
- Study Area
- Purpose and Need
- Workflow
- Annual Crashes and Five-Year Time of Day Crashes (11/30/2017 – 11/30/2022)
- Crashes by Location and Type (11/30/2017 – 11/30/2022)
- Existing Intersection
- Improvement Option 1
- Improvement Option 2
- Schedule
- 25 Attendees
- 12 Comment Forms were Completed and Submitted at the Workshop
- 1 Online Response to the Comment Form (posted from 4/10/2023 to 5/10/2023)
- 153 Online Responses to the Comment Form (posted 5/5/2023 to 5/19/2023)
- See [Appendix C](#) for Workshop 2 Summary Report

Emergency Responders

June 6, 2023

- Virtual via Zoom
- Study recap including restating Purpose and Need, recap of Public Workshops and feedback received, traffic volumes, crash history, conceptual alternatives developed, on-line poll results, cost estimates, and recommendations

Public Advisory Committee (PAC)

June 8, 2023

- Live
- Dover Kent/County MPO
- Study recap including restating Purpose and Need, recap of Public Workshops and feedback received, traffic volumes, crash history, conceptual alternatives developed, on-line poll results, cost estimates, and recommendations

Town of Clayton Council Meeting

June 12, 2023

- Live
- Town of Clayton Council Chambers
- Study recap including restating Purpose and Need, recap of Public Workshops and feedback received, traffic volumes, crash history, conceptual alternatives developed, on-line poll results, cost estimates, and recommendations

Smyrna Clayton Boulevard Intersection Improvement Study

Technical Advisory Committee (TAC)

June 13, 2023

- Live
- Dover Kent/County MPO
- Study recap including restating Purpose and Need, recap of Public Workshops and feedback received, traffic volumes, crash history, conceptual alternatives developed, on-line poll results, cost estimates, and recommendations

MPO Council

July 6, 2023

- Live
- Dover Kent/County MPO
- Study recap including restating Purpose and Need, recap of Public Workshops and feedback received, traffic volumes, crash history, conceptual alternatives developed, on-line poll results, cost estimates, and recommendations
- Turning templates for the Smyrna Clayton Blvd/Wheatleys Pond Rd, Carter Rd Intersection for Option 2 for large trucks and fire department ladder trucks

Alternatives Considered

Two conceptual improvement options (Concept Option 1 and Concept Option 2) were developed and evaluated to address the skewed intersection of Smyrna Clayton Boulevard and Wheatleys Pond Road. Both options eliminate this skew and improve safety and operations at the intersection.

Concept Option 1

Concept Option 1 extends Carter Road through the existing intersection with Wheatleys Pond Road to form a four-way, signalized intersection with Smyrna Clayton Boulevard at the American Legion Ambulance Services driveway. This configuration would eliminate the difficult right turn movement from Smyrna Clayton Boulevard onto Wheatleys Pond Road. The Wheatleys Pond Road and Carter Road intersection would also be a four-way signalized intersection as part of Concept Option 1. The left turn movement from Wheatleys Pond Road onto Smyrna Clayton would also be eliminated as part of Concept Option 1.

Bicycle lanes would be maintained along Smyrna Clayton Boulevard, Wheatleys Pond Road, and Carter Road and through the new intersection with Concept Option 1. Where missing, new sidewalks would be added to tie into existing sidewalks and complete the links, and pedestrian crosswalks would be added at the signalized Smyrna Clayton Boulevard/Carter Road intersection and the signalized Wheatleys Pond Road/Carter Road intersection.

See *Figure 18*.

Smyrna Clayton Boulevard Intersection Improvement Study

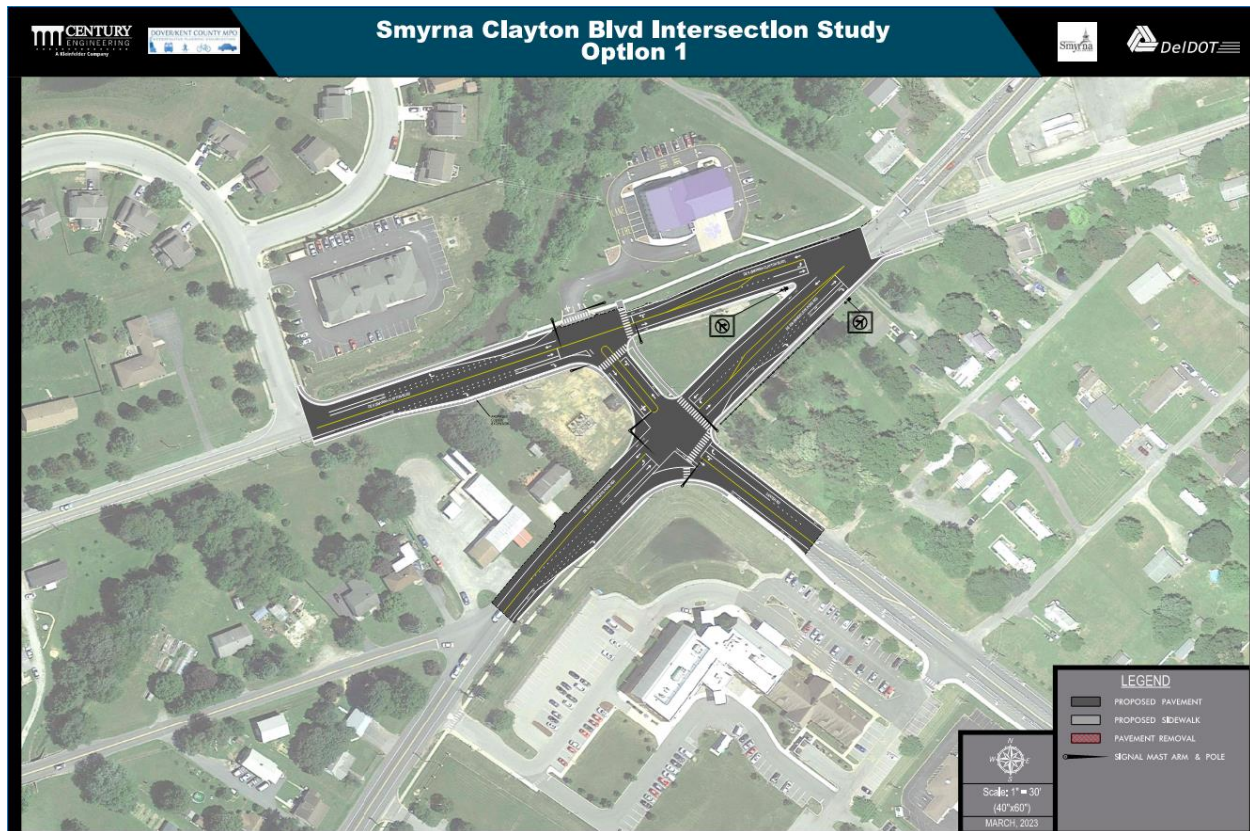


Figure 18 Concept Option 1

Concept Option 2

Concept Option 2 also extends Carter Road through the existing intersection with Wheatleys Pond Road, but ties into a new sweep section of Smyrna Clayton Boulevard at the boarder of properties owned by the Town of Smyrna and the State. This option would eliminate a section of Smyrna Clayton Boulevard between the new sweep to approximately the spur road connecting Smyrna Clayton Boulevard and W Glenwood Avenue, including the exiting Smyrna Clayton Boulevard/Wheatleys Pond Road intersection.

The existing spur road connecting Smyrna Clayton Boulevard and W Glenwood Avenue would be replaced with a new spur with full left and right turn lanes from Smyrna Clayton Boulevard to W Glenwood Avenue and a through lane from W Glenwood Avenue to Smyrna Clayton Boulevard in the other direction.

Realigned and redesigned accesses to the American Legion Ambulance Services driveway entrance and a private residence just west of the realigned Smyrna Clayton Spur would also be part of Concept Option 2.

Bicycle lanes would be maintained along Smyrna Clayton Boulevard, Wheatleys Pond Road, Carter Road, and W Glenwood Avenue, as well as through the new intersections with Concept Option 2. Where missing, new sidewalks would be added to tie into existing sidewalks to complete the links, and pedestrian

Smyrna Clayton Boulevard Intersection Improvement Study

crosswalks would be added at the signalized Smyrna Clayton Boulevard/Wheatleys Pond Road/Carter Road intersection and the signalized Smyrna Clayton Boulevard/W Glenwood Avenue intersection.

See [Figure 19](#).



Figure 19 Concept Option 2

Larger scale plans of both Concept Option 1 and Concept Option 2 and be found in [Appendix D](#)

Recommendations

Both Concept Option 1 and Concept Option 2 meet the identified purpose and need of the study of improving (or eliminating) the acute angle of the Smyrna Clayton Boulevard and Wheatleys Pond Road intersection thereby improving safety and operational efficiency at the intersection. Both options extend Carter Road to Smyrna Clayton Boulevard to allow for a more direct connection between Smyrna Clayton Road and Carter Road, and thereby eliminate right turn movement from Smyrna Clayton Boulevard onto Wheatleys Pond Road.

Smyrna Clayton Boulevard Intersection Improvement Study

While Concept Option 1 improves the Smyrna Clayton Boulevard and Wheatleys Pond Road intersection by eliminating the right turn from the former to the latter, Concept Option 2 eliminates and removes the existing Smyrna Clayton Boulevard and Wheatleys Pond Road intersection. Additionally, public feedback received via public workshops and online surveys indicates a clear preference for Concept Option 2.

However, coordination with, and feedback from local emergency responders indicated some concerns with the turning radii at the new intersections (Smyrna Clayton Blvd/Wheatleys Pond Rd/Carter Rd (SCB/WPR/CR) and Smyrna Clayton Blvd/Glenwood Ave (SCB/GR)) associated with Concept Option 2.

Figures 20 and 21 provide close-up views of Smyrna Clayton Blvd/Wheatleys Pond Rd/Carter Rd and Smyrna Clayton Blvd/Glenwood Ave intersections respectively.

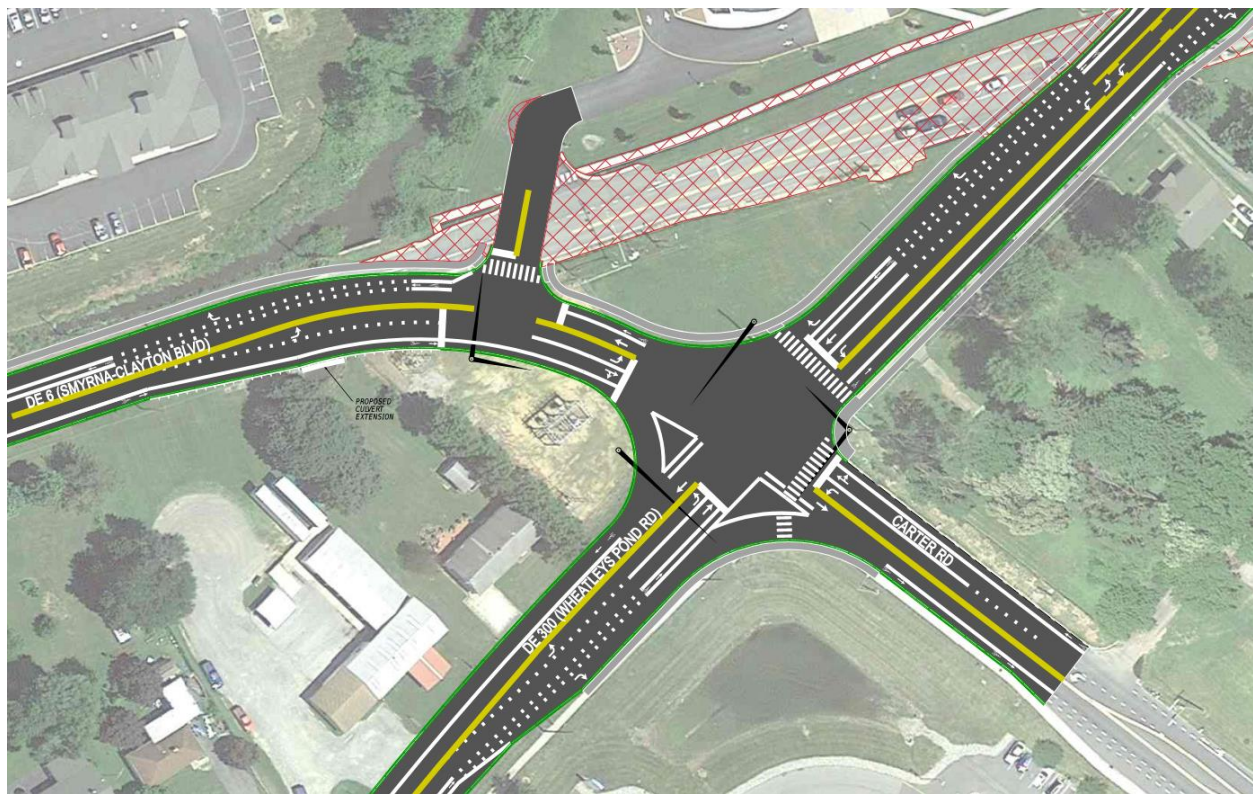


Figure 20 SCB/WPR/CR Intersection



Figure 21 SCB/GR Intersection

As part of the analyses of this study and to address these concerns, turning templates were applied at these intersections to ensure both large tractor-trailer trucks (WB-67), as well as fire department ladder trucks (95-HP) are able to negotiate the new intersections associated with Concept Option 2.

Turning templates for the Smyrna Clayton Blvd/Wheatleys Pond Rd/Carter Rd and Smyrna Clayton Blvd/Glenwood Ave intersections are provided in [Appendix E](#) of this report.

Therefore, it is the recommendation of this study that Concept Option 2 be carried forward to the design phase as the preferred alternative. It is further recommended that the radii at both the new Smyrna Clayton Blvd/Wheatleys Pond Rd/Carter Rd intersection and the new Smyrna Clayton Blvd/Glenwood Ave intersection be evaluated during the design phase to determine if “flatter” curves can be implemented to better accommodate large tractor-trailer trucks and fire department ladder trucks. It is recommended

Smyrna Clayton Boulevard Intersection Improvement Study

that coordination with the emergency responders continues during the design phase to ensure their input is considered during design revisions.

Cost Estimates

Concept Option 1

Preliminary Engineering	\$486,000.00
Right-of-Way*	\$50,000.00
Construction	\$3,112,000.00
Total Cost**	\$3,648,000.00

Concept Option 2

Preliminary Engineering	\$929,000.00
Right-of-Way*	\$250,000.00
Construction	\$5,695,000.00
Total Cost**	\$6,874,000.00

*Assumes Town and State properties are donated

**All costs are rounded. Complete conceptual cost estimates for Concept Options 1 and 2 are provided in [Appendix F](#) of this report.

Appendix A: Traffic Analysis Report

Introduction

Smyrna Clayton Boulevard (DE 6) and Wheatleys Pond Road (DE 300) intersect at an extremely skewed angle that makes turns difficult for vehicles, especially truck traffic from eastbound Smyrna Clayton Boulevard turning right onto southbound Wheatley's Pond Road. A high truck volume generator, the Walmart Distribution Center is located approximately half a mile south of this intersection on the east side of Wheatleys Pond Road. The Town of Smyrna views this intersection as dangerous and non-conforming and would like the Dover / Kent County MPO and DelDOT to consider extending Carter Road to Smyrna Clayton Boulevard to allow for a safer right off of the latter and directly onto the former. As part of the preliminary study of the problem, Century Engineering has been tasked with investigation the traffic volumes at intersections and crash conditions within the study limits.

Existing Traffic

Intersections within the study limits are as follows:

1. Carter Road at Wheatleys Pond Road
2. Smyrna Clayton Boulevard at Wheatleys Pond Road
3. Spur at Wheatleys Pond Road
4. Spur at Smyrna Clayton Boulevard

Turning movement counts were performed at the intersections on Thursday November 29, 2022, a normal weekday, with all schools in in-person sessions. The counts were collected to capture the A.M., midday and P.M. peak hours. Separate counts of Trucks / Heavy vehicles were also collected. The total turning movement volumes of all vehicles (light vehicles and heavy vehicles / trucks) and the turning movement volumes for heavy vehicles / trucks only are presented in schematic diagrams in the figures that follow. **Figure 1, Figure 2 and Figure 3** present the volumes respectively for A.M., midday and P.M. peak hours. Percentage of truck traffic volumes to total traffic volumes are provided in **Figure 4, Figure 5, and Figure 6**.

Figure 1: 2022 A.M. Peak Hour Turning Movement Counts (Balanced)

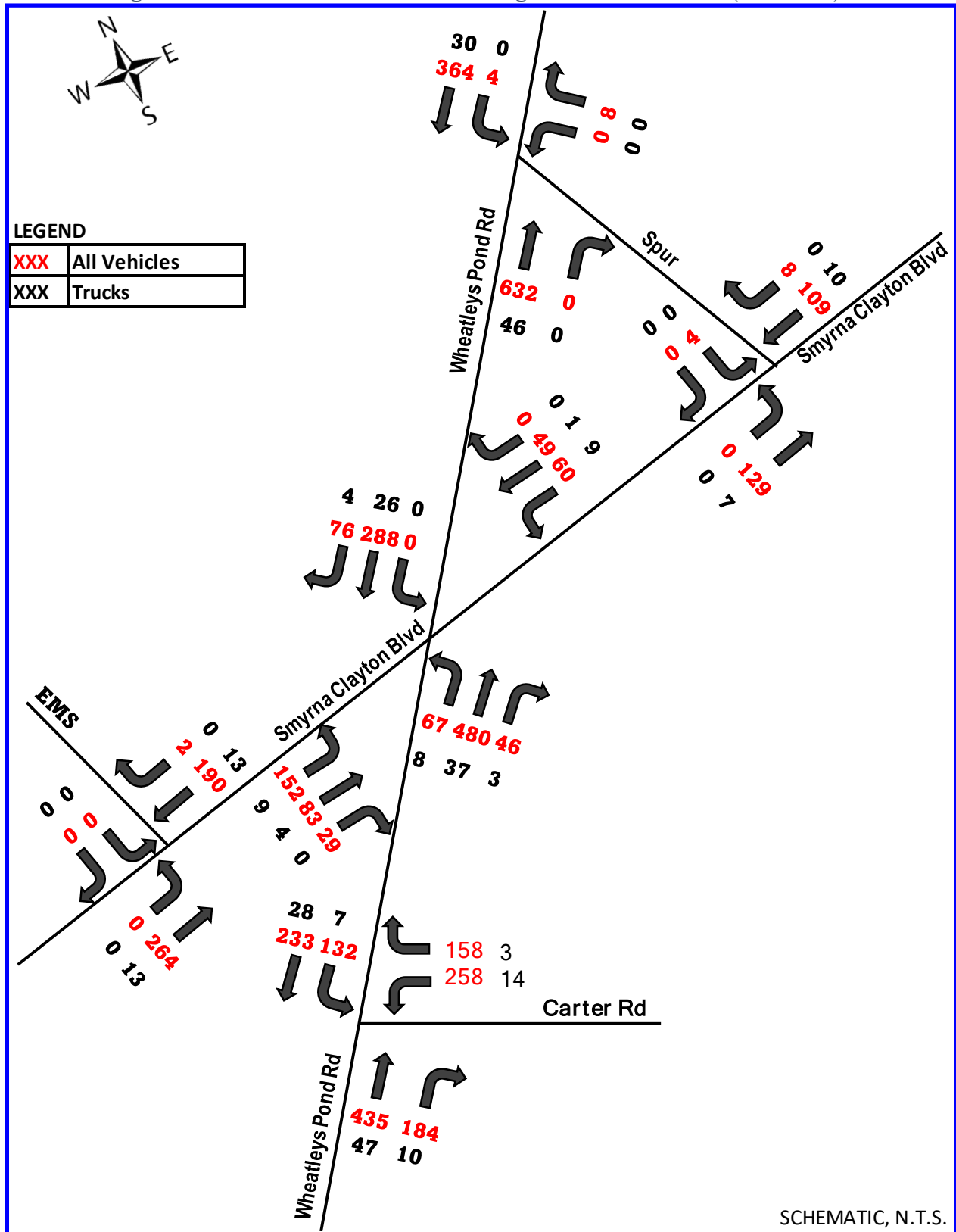


Figure 2: 2022 Midday Peak Hour Turning Movement Counts (Balanced)

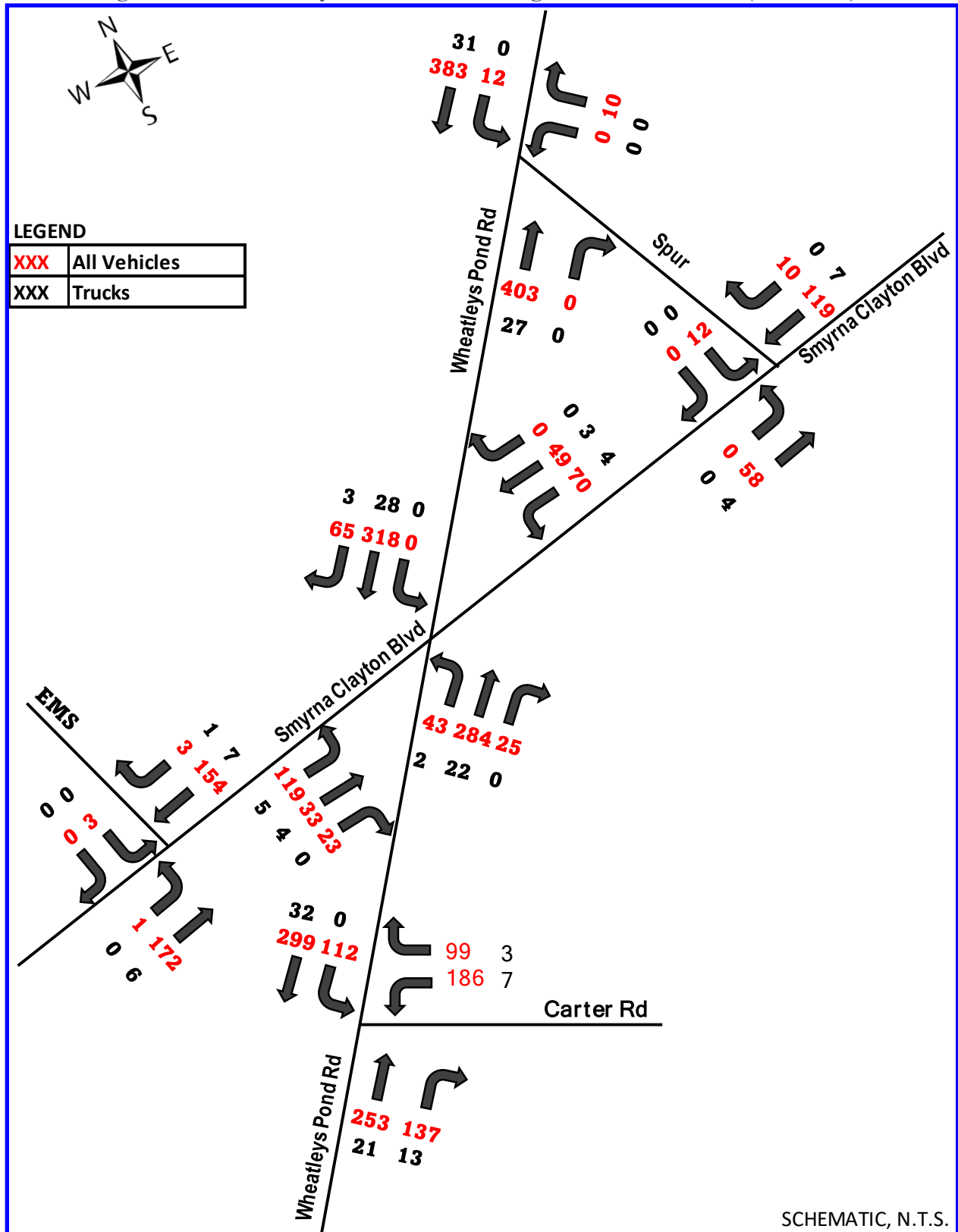


Figure 3: 2022 P.M. Peak Hour Turning Movement Counts (Balanced)

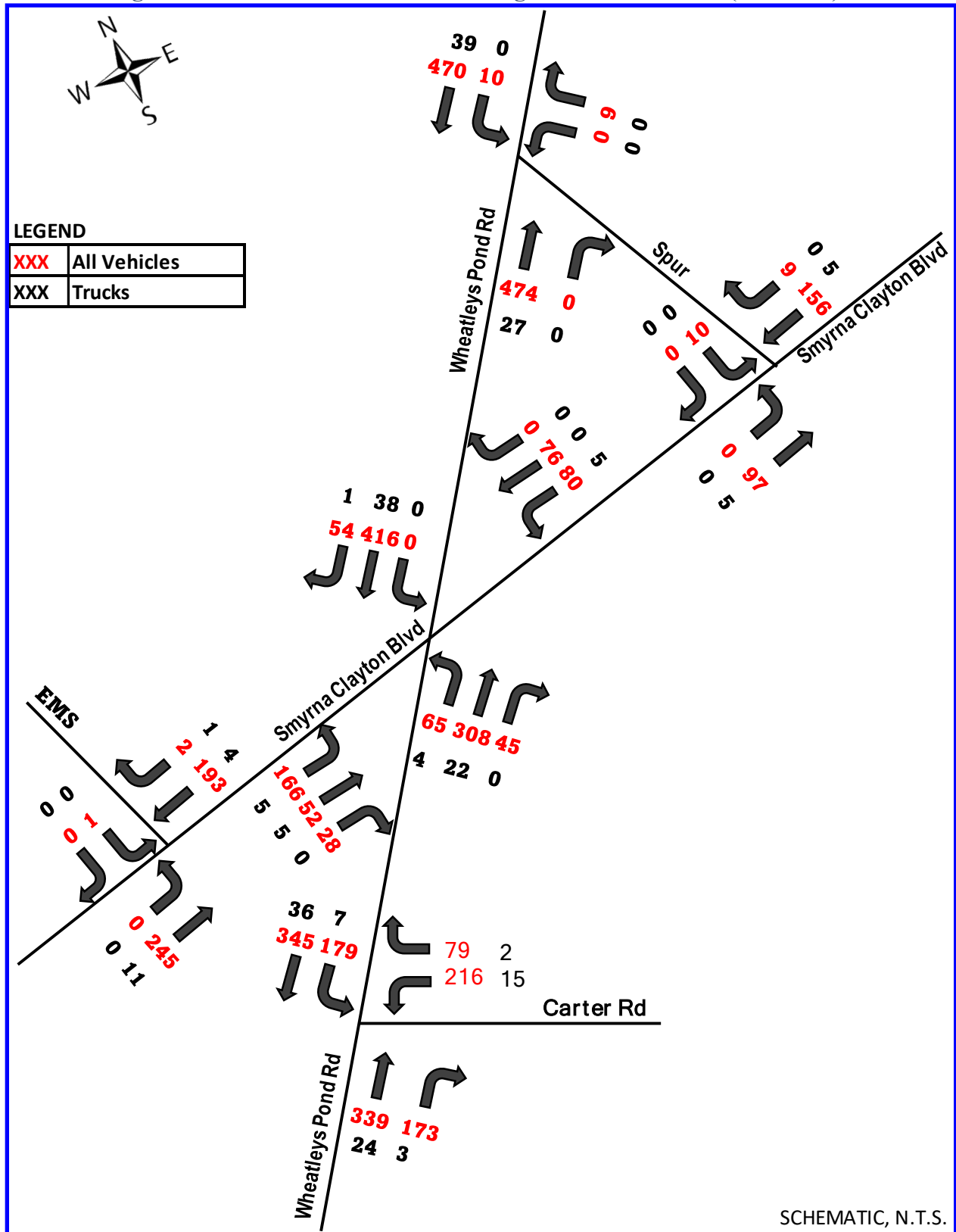


Figure 4: 2022 A.M. Peak Hour Truck Percentage

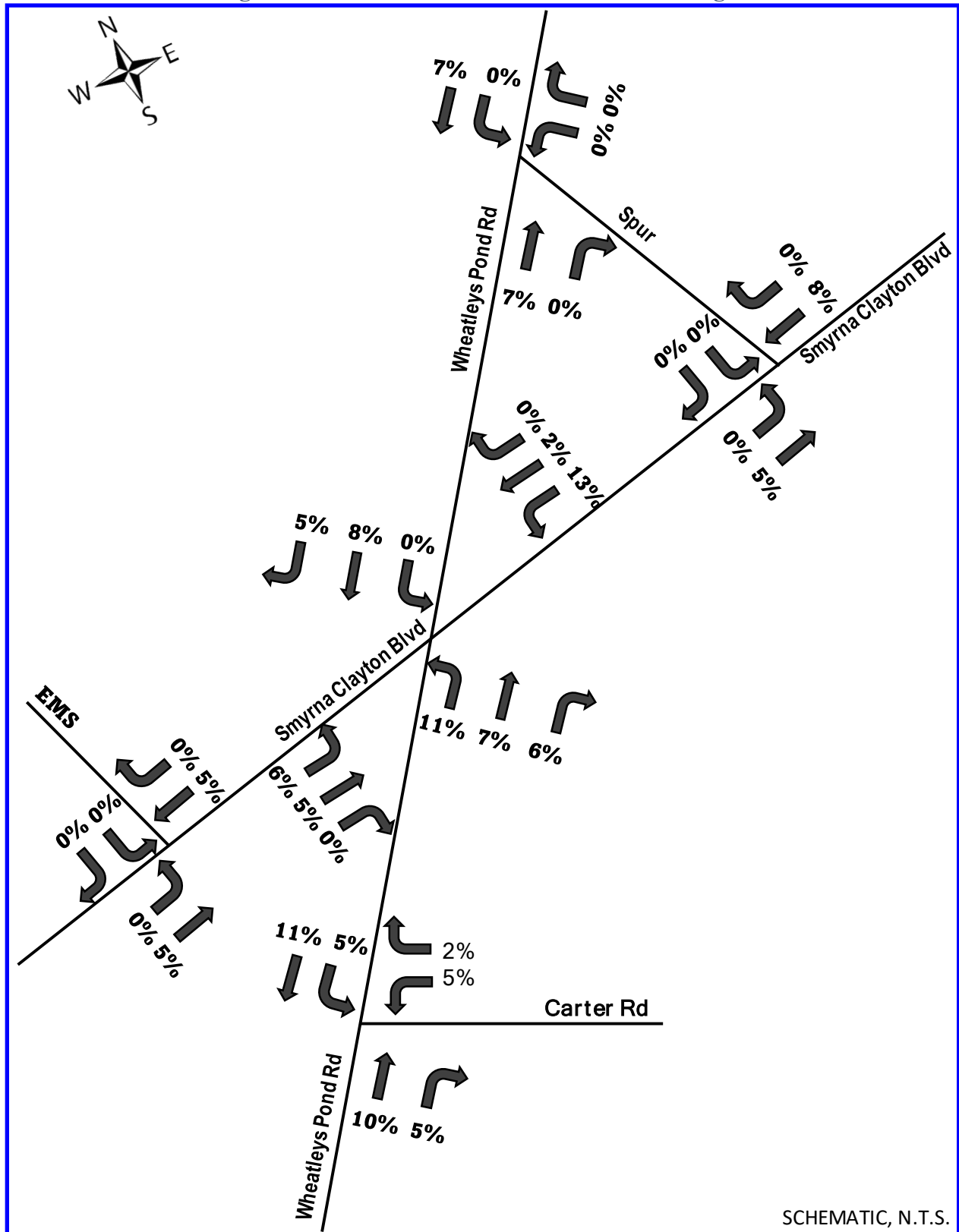
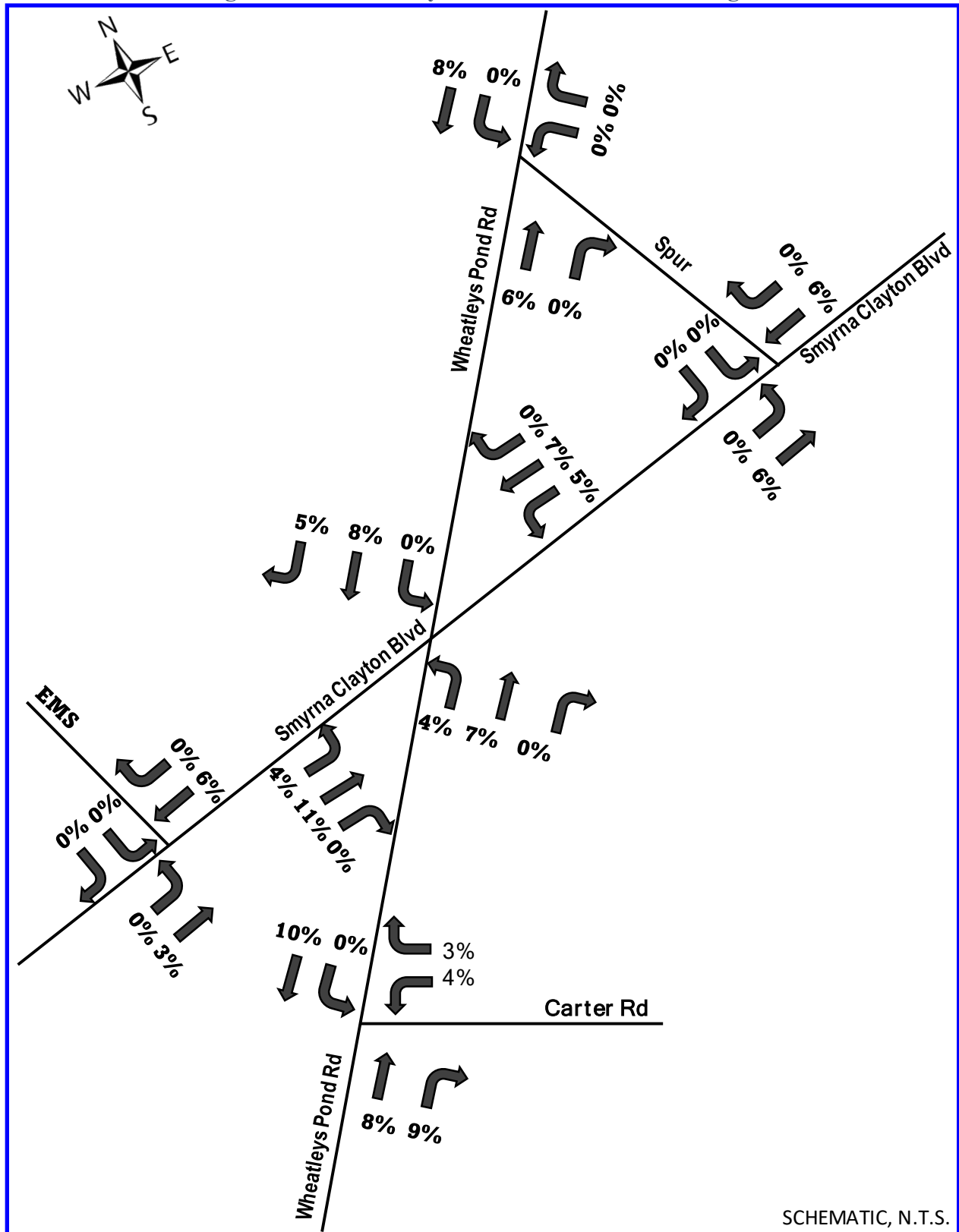


Figure 5: 2022 Midday Peak Hour Truck Percentage



Crash Evaluation

Crash data for the five-year period from November 30, 2017, through November 30, 2022, was obtained from DelDOT for the study limits. Thirty-eight (38) total crashes were reported. The Approximate crash locations, number, type and severity of crashes, are presented **Figure 7**.

Majority of the crashes within the study limits, twenty-nine (29), approximately 76.3%, occurred at intersections; nineteen (19), approximately 50.0% at the skewed intersection of Smyrna Clayton Boulevard and Wheatleys Pond Road, seven (7), approximately 18.4% at the intersection of Wheatleys Pond Road and Carter Road, two (2), approximately 5.3% at the intersection of Smyrna Clayton Boulevard and the Spur. And one (1) approximately 2.6% at the intersection of Wheatleys Pond Road and the Spur. No fatal crashes were reported. Twenty-eight (28), approximately 73.7% of the reported crashes involved property damage (PD) only, and the remaining fifteen (15) approximately 26.3% involved personal injury (PI).

Table 1 presents annual and five-year summary of the types of crashes by severity. The most frequent type of crashes within the study limits are front-to-rear crashes. Fourteen (14 / 36.8%) front-to-rear crashes were reported for the five-year period. This was followed closely by angle crashes. Twelve (12 / 31.6%) angle crashes were reported for the period. Both angle and front-to-rear crashes are consistent with the typically crash characteristic at / near intersections. The crash types experienced within the study limits do not therefore appear to be indicative of a peculiar problem.

The extreme skew of the intersection of Smyrna Clayton Boulevard and Wheatleys Pond Road may have been a contributing factor to the one property damage fixed-object crash involving collision into the traffic signal pole on the south-west side of the intersection (See **Figure 7**). That crash involved a vehicle on northbound Wheatleys Pond Road attempting to negotiate the sharp left-turn onto westbound Smyrna Clayton Boulevard. This proved too difficult for the operator of the vehicle who lost control and crashed into the pole.

Table 1: Crash Type and Severity

Collision Type	Crash Severity / Classification															Crash Severity / Classification			
	PD	PI	Total	PD	PI	Total	PD	PI	Total	PD	PI	Total	PD	PI	Total	PD	PI	Total # of Crashes	% of Total Crashes
	November 30, 2017 - November 30, 2018			November 30, 2018 - November 30, 2019			November 30, 2019 - November 30, 2020			November 30, 2020 - November 30, 2021			November 30, 2021 - November 30, 2022			5-Year Totals			
Front to Front	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2.6%
Front to Rear	1	0	1	3	1	4	3	0	3	1	3	4	2	0	2	10	4	14	36.8%
Angle	3	1	4	2	0	2	2	0	2	0	1	1	2	1	3	9	3	12	31.6%
Sideswipe, Same Direction	0	0	0	0	0	0	0	0	0	3	0	3	3	0	3	6	0	6	15.8%
Sideswipe, Opposite Direction	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	2.6%
Not a Collision Between Two Vehicles	1	0	1	2	0	2	0	0	0	0	0	0	0	0	0	3	0	3	7.9%
Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Other	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	2.6%
Total	6	1	7	7	1	8	5	0	5	6	4	10	7	1	8	31	7	38	100.0%

Figure 7: Crash Map

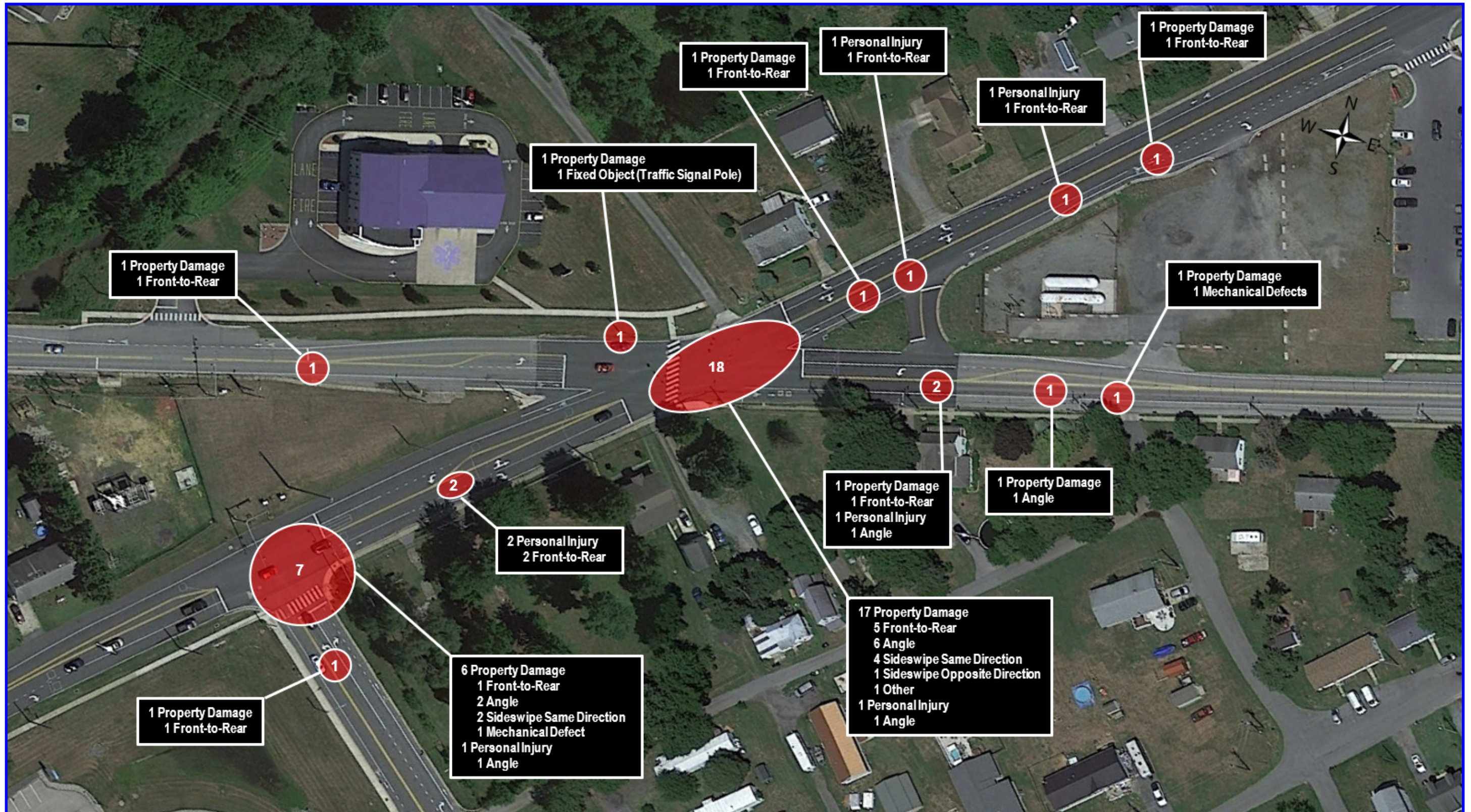
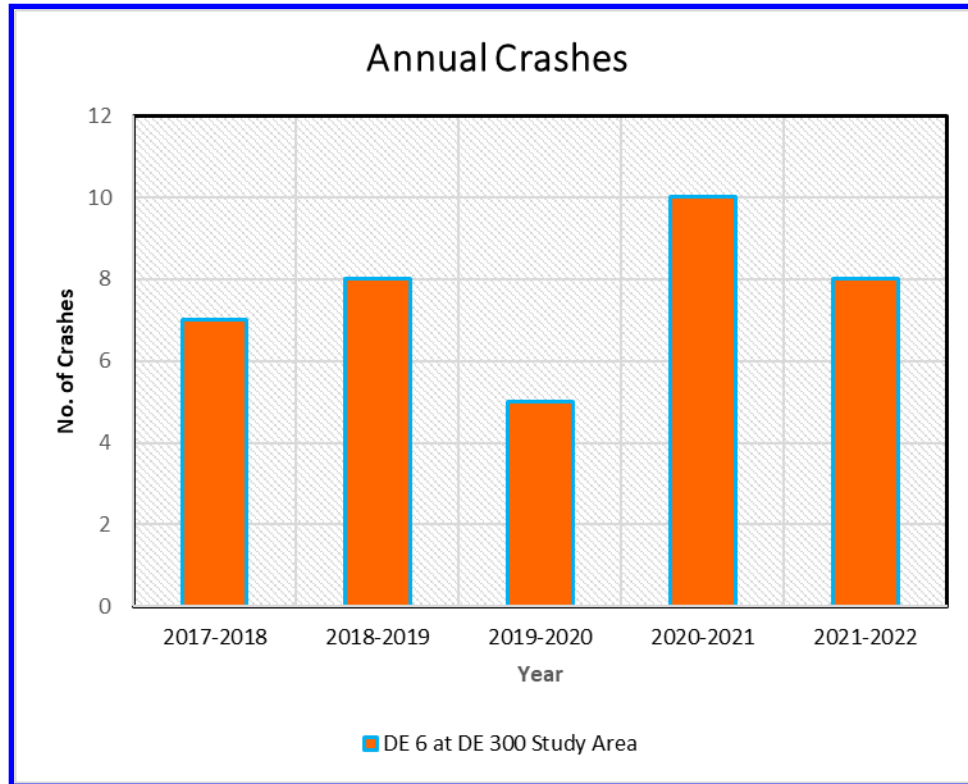


Figure 8 presents a graphical representation of the annual crashes. As provided in the figure, the highest number of annual crashes, ten (10), was reported during the 2020 – 2021 period. This was double the number of crashes reported in the prior 12-month period, 2019 – 2020. Reported crashes dropped by two to eight (8) during the most recent one-year period from November 2021 to November 2022, an approximately 20% decrease.

Figure 8: Annual Crashes



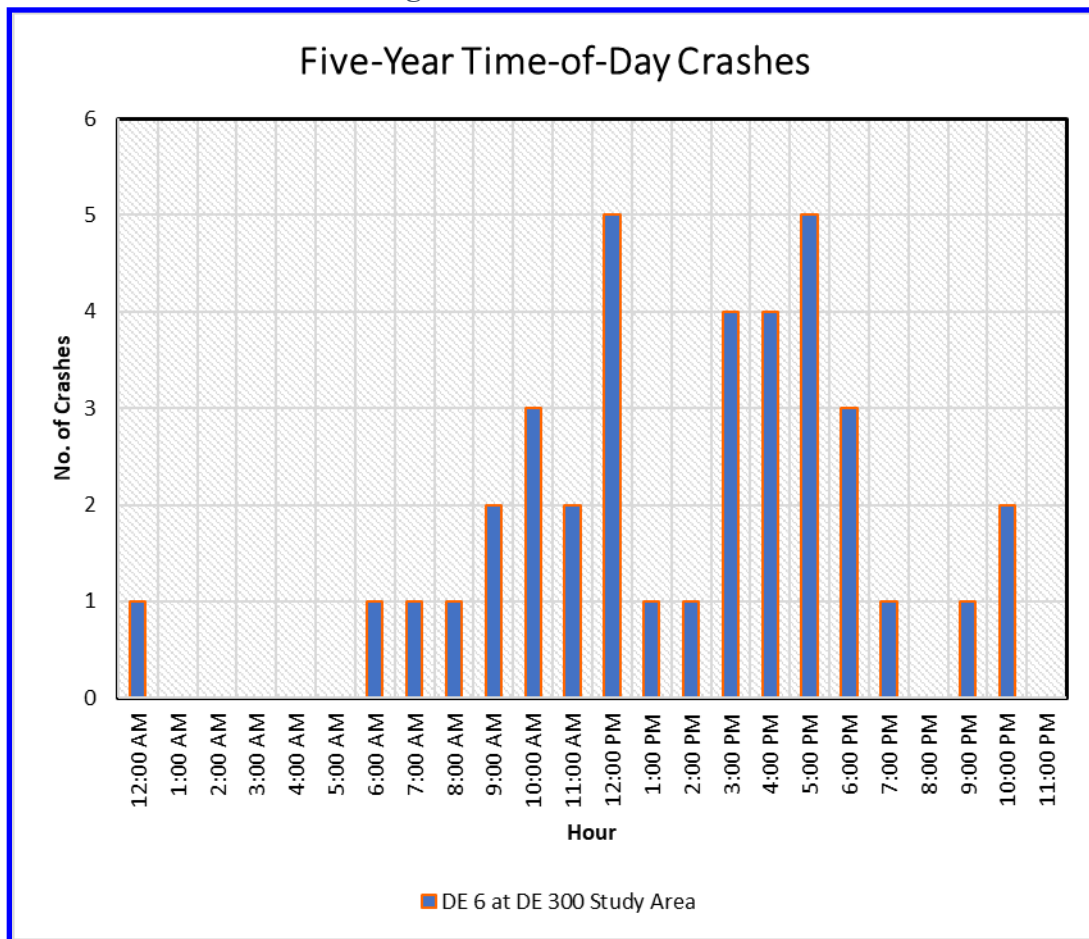
As shown in **Table 2**, majority of the reported crashes occurred during daylight and dark but lighted conditions and under clear weather and dry road surface conditions. It appears therefore that lighting may not be a problem associated with the frequency of crashes within the study limits.

Table 2: Weather, Lighting and Surface Conditions

Weather Conditions			Lighting Conditions			Surface Conditions		
Description	No. of Crashes	% of Total Crashes	Description	No. of Crashes	% of Total Crashes	Description	No. of Crashes	% of Total Crashes
Clear	30	78.9%	Daylight	31	81.6%	Dry	32	84.2%
Cloudy	4	10.5%	Dark-Lighted	5	13.2%	Wet	4	10.5%
Rain	3	7.9%	Dark-Not Lighted	1	2.6%	Ice/Frost	2	5.3%
Sleet; Hail (freezing rain or drizzle)	1	2.6%	Dawn	1	2.6%	Total	38	100.0%
Total	38	100.0%	Total	38	100.0%			

All crashes by time of day are presented in **Figure 7**. As shown, crashes are not confined to any particular time of day within the study limits. Crashes peak during the noon hour and again during the 5:00 P.M. to 6:00 P.M. time periods. Crashes appear to be higher during the hours of increased traffic activity as is logically expected.

Figure 9: Annual Crashes



The primary contributing factors for crashes within the study limits are summarized in **Table 3**. As provided in the table, “Driver Inattention, Distraction, or Fatigue” was the most frequent reason (13 / 34.2%) provided for reported crashes. “Disregard for Traffic Signal” (5 / 13.2%) and “Following too Close” (3 / 7.9%) were the next most frequent reasons. Together these three reasons accounted for twenty-one (21) out of the total of the thirty-eight (38) reported crashes i.e., approximately 55.3%. Except for “Mechanical Defects” and “Unknown” attributed to 2 crashes / 5.3% each, these attributed reasons, together with the various others provided in **Table 3**, are clearly driver behaviors that are not necessarily susceptible to correction with physical improvements.

Table 3: Provided Reasons for Crashes

Primary Reason for Crash		
Description	No. of Crashes	% Crash
Passed Stop Sign	2	5.3%
Failure to Yield Right of Way	1	2.6%
Following too Close	3	7.9%
Disregard Traffic Signal	5	13.2%
Driving in a Careless or Reckless Manner	4	10.5%
Driver Inattention, Distraction, or Fatigue	13	34.2%
Improper Lane Change	3	7.9%
Improper Passing	1	2.6%
Improper Turn	2	5.3%
Mechanical Defects	2	5.3%
Unknown	2	5.3%
Total	38	100.0%

Future Traffic

Post-pandemic, growth factors (GF) provided by DelDOT Planning for proposed projects in north and west Kent County range between 0.75% and 1% per annum. The higher 1% per annum value was used for this study. A total growth of 1.06 and 1.32 were applied to the 2022 traffic volumes to obtain Opening Year (OY) 2028 and Design Year (DY) 2050 traffic volumes respectively.

Two design alternatives were developed which meet the objective of eliminate the difficult turns. These alternatives are presented in **Figure 10** and **Figure 11**. Traffic volumes for exiting year 2022, OY 2028 and DY 2050 were reassigned to the new intersection configurations in each alternative. These volumes are presented in **Figure 12** through **Figure 14** for Alternative 1, and **Figure 15** through **Figure 17** for Alternative 2.

Figure 10: Alternative 1

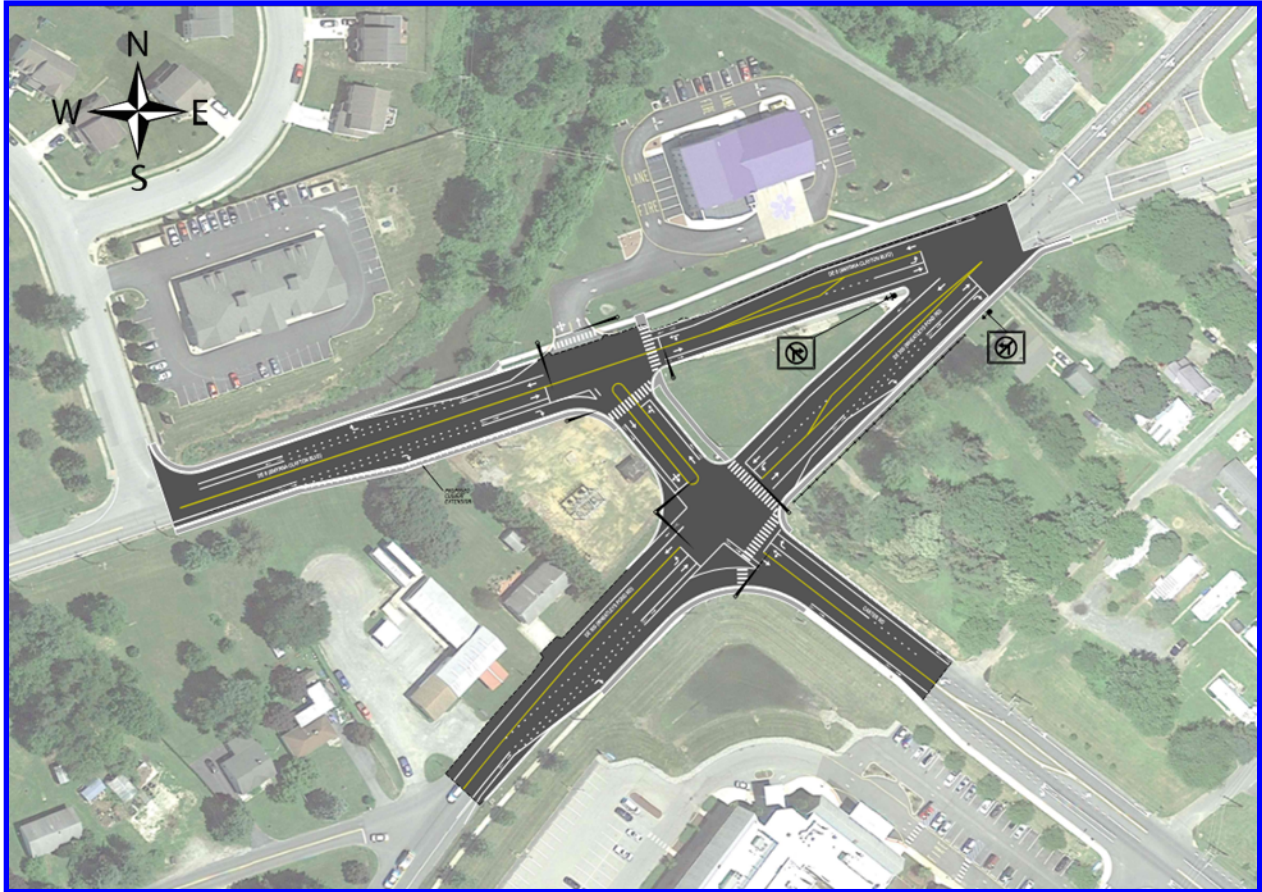


Figure 11: Alternative 2

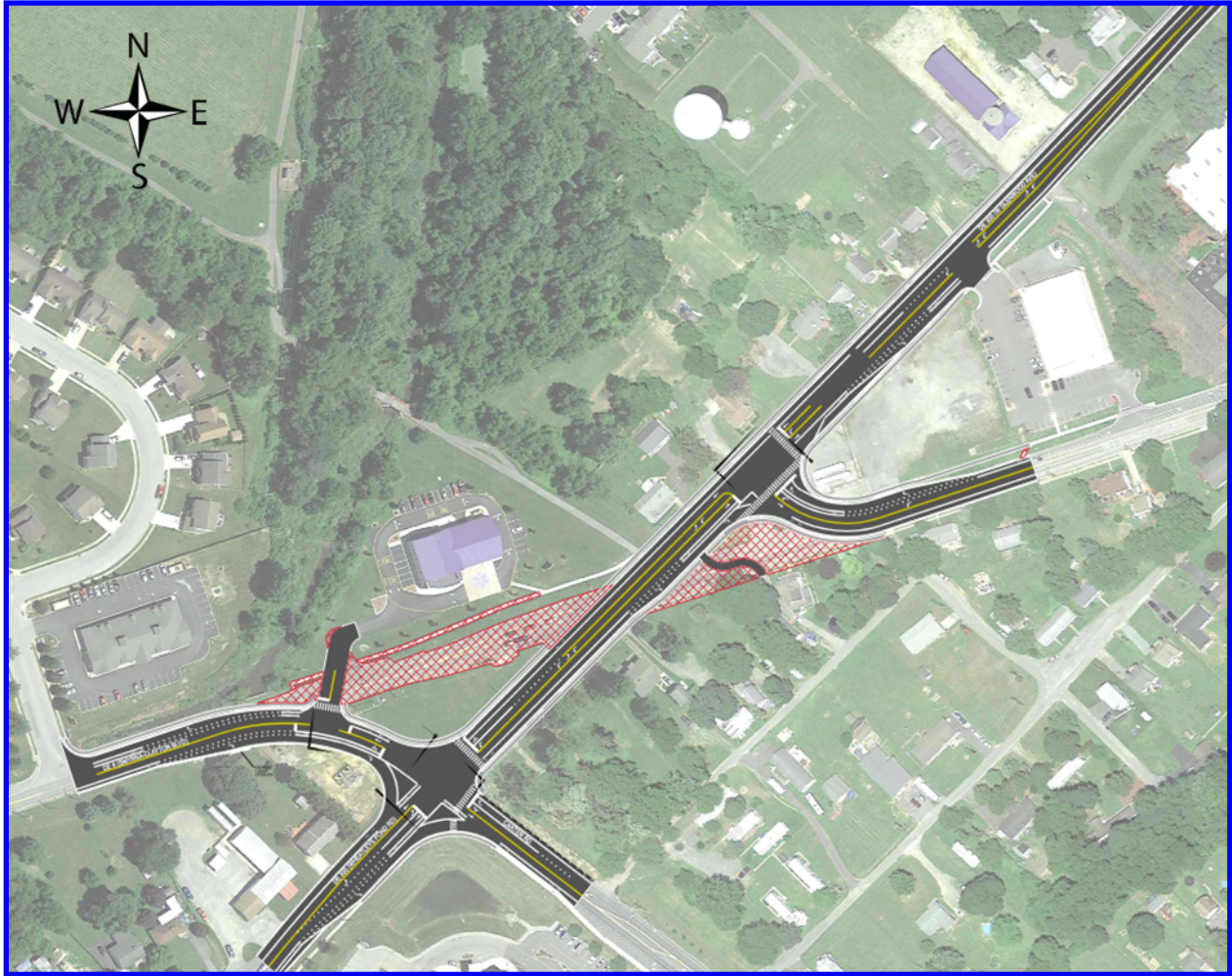


Figure 13: Alternative 1 Intersections with OY 2028 Traffic Volumes

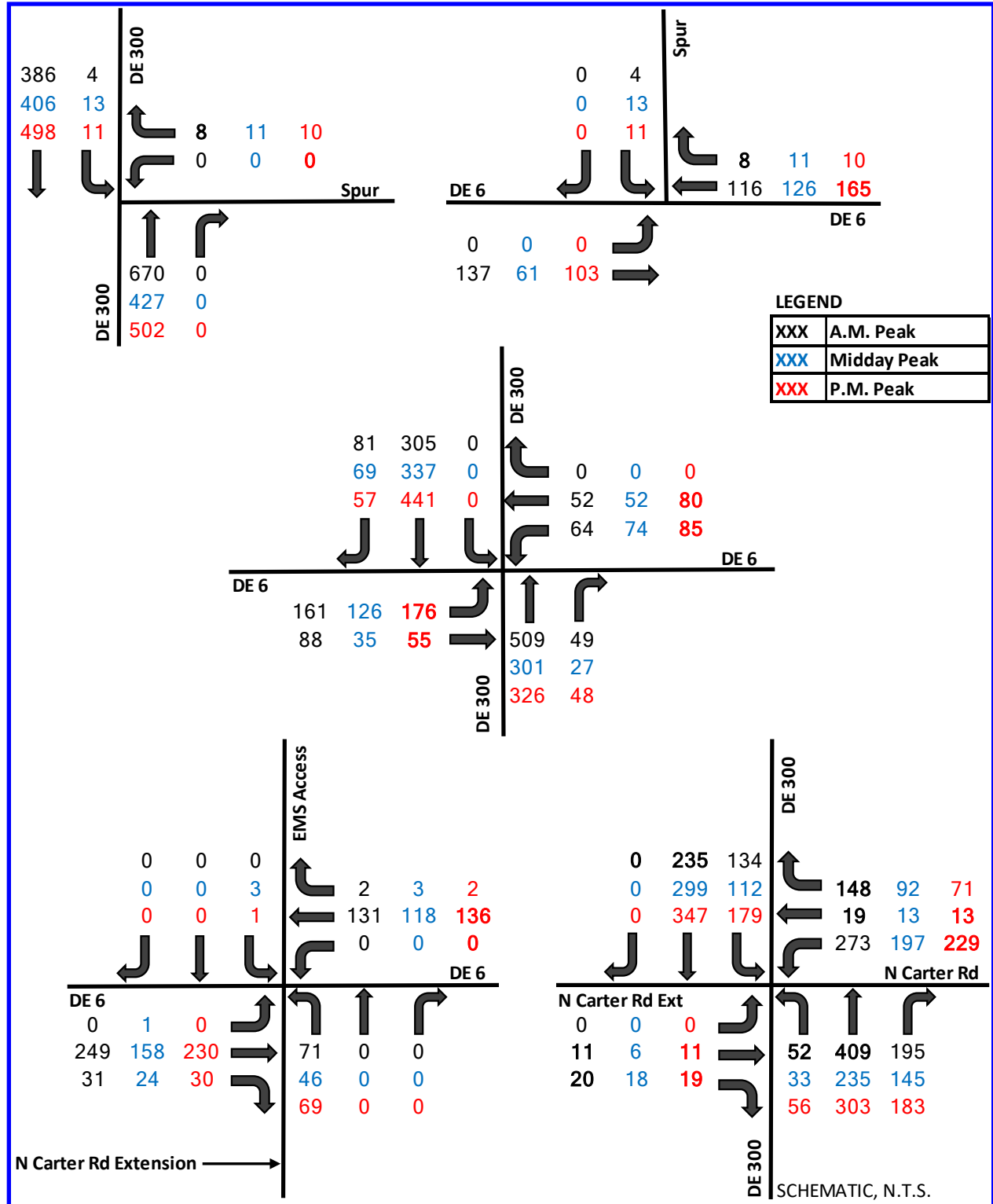


Figure 14: Alternative 1 Intersections with DY 2050 Traffic Volumes

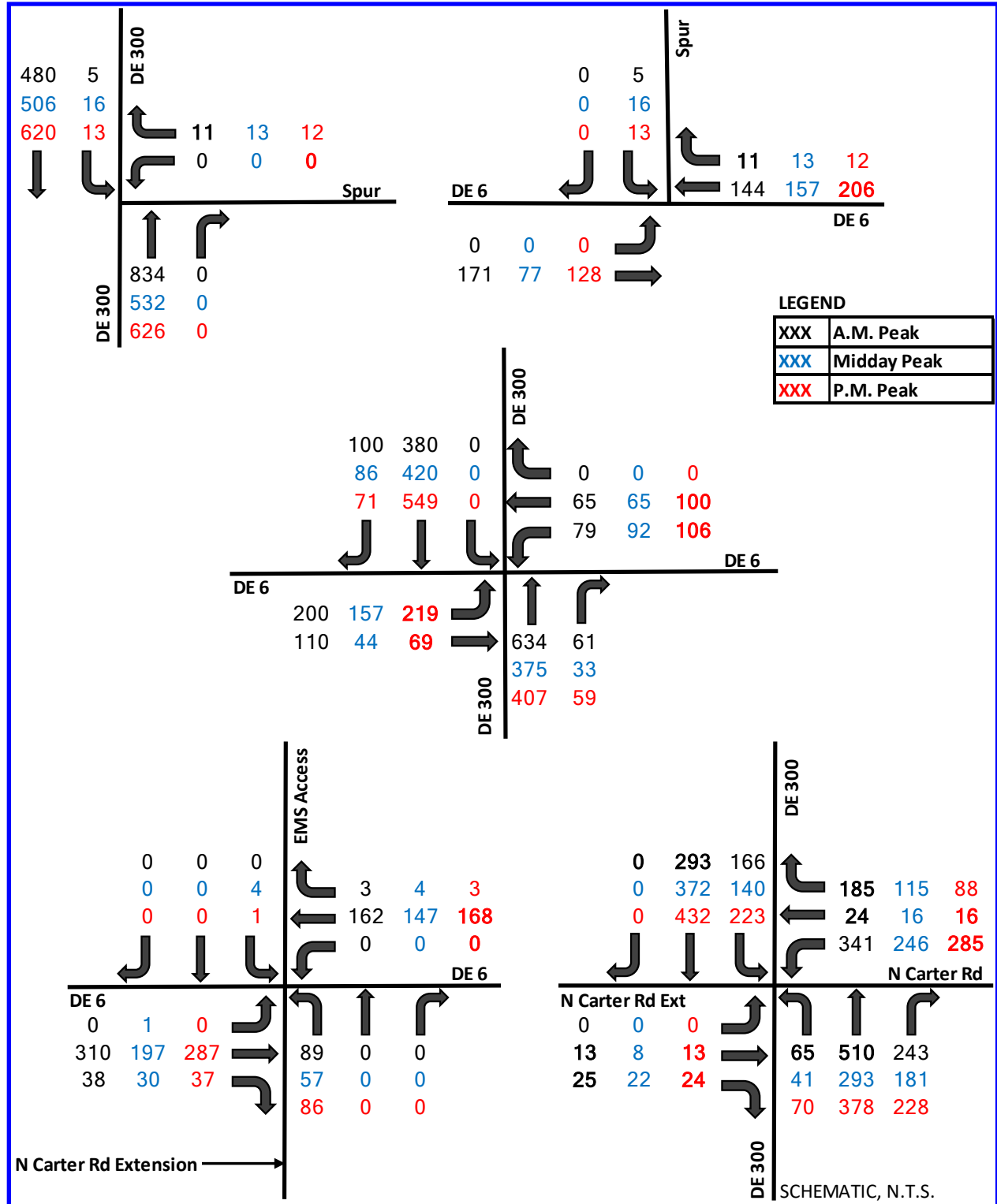


Figure 15: Alternative 2 Intersections with 2022 Traffic Volumes

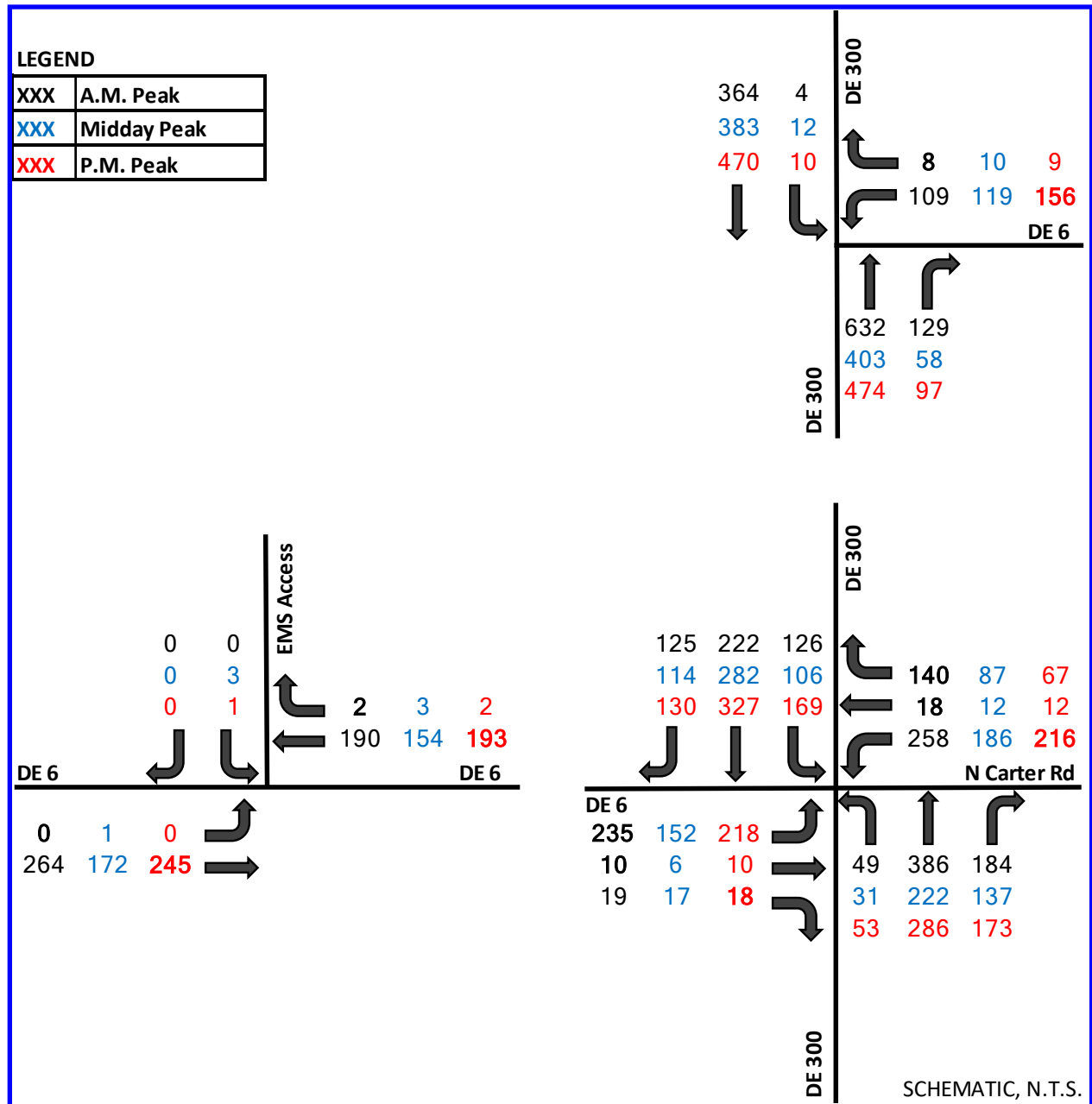


Figure 16: Alternative 2 Intersections with OY 2028 Traffic Volumes

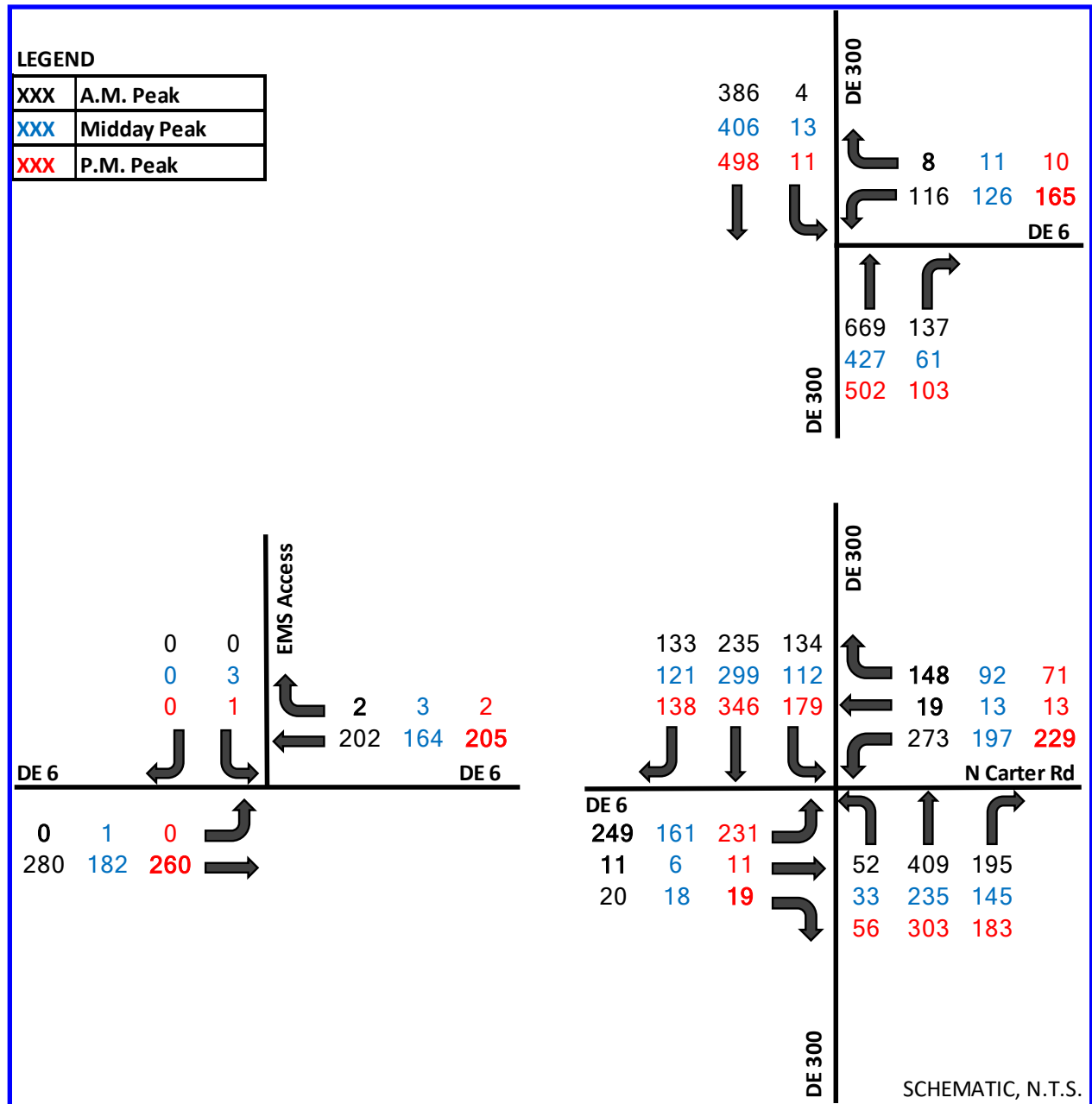
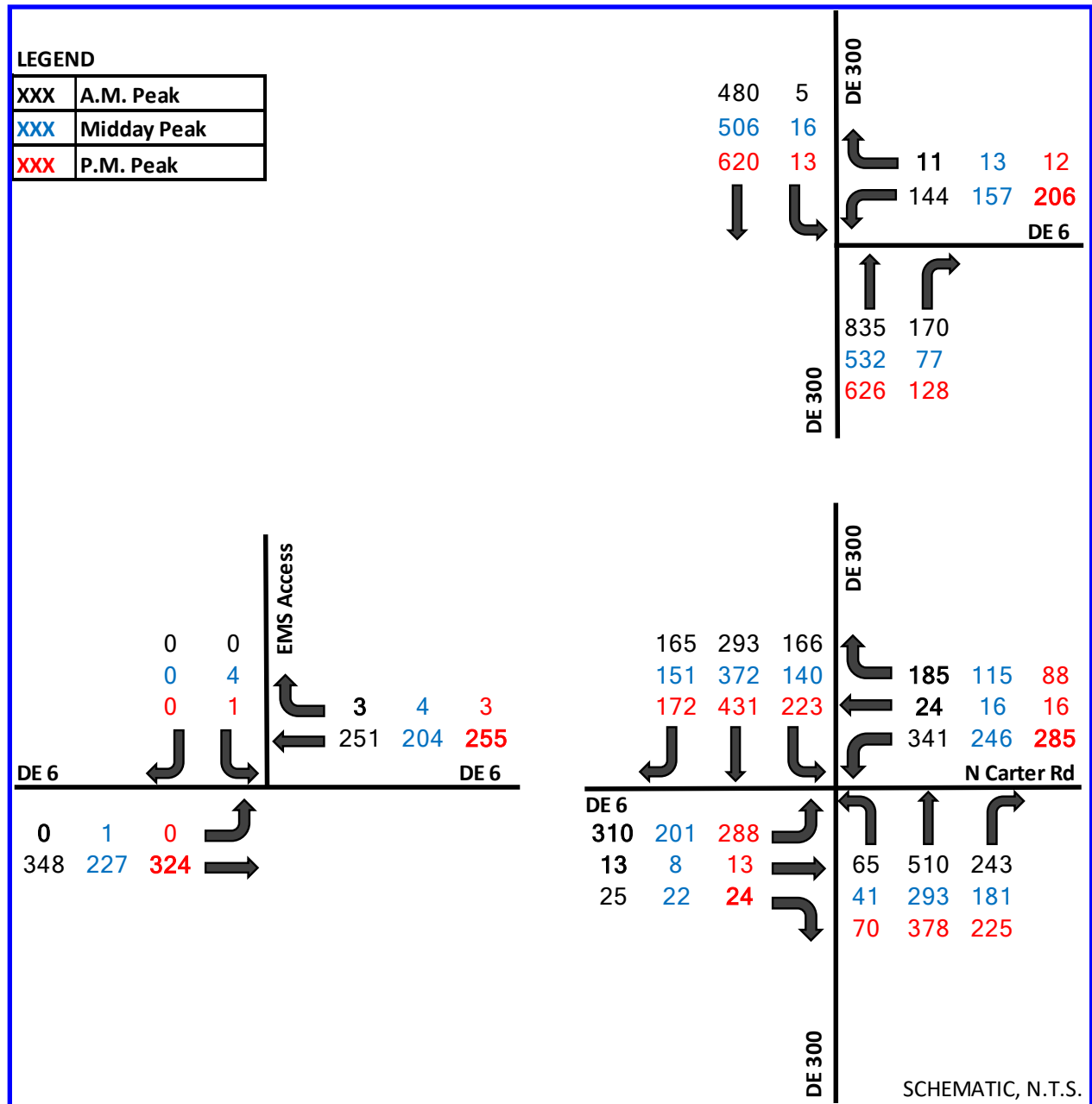


Figure 17: Alternative 2 Intersections with DY 2050 Traffic Volumes



Traffic Operational Analysis

Traffic operational analyses was performed for all existing & future conditions using Synchro version 11 software. Existing signal timing and coordination data obtained from DelDOT Traffic Management Center (TMC) was used to aid in replicating all existing conditions as closely as possible. Delay and level of service (LOS) are the measures of effectiveness (MOE) generated from the operational analyses. The LOS Criteria for signalized and unsignalized intersections are presented in **Table 4**. The existing conditions MOE are presented in **Table 5**

Table 4: MOE Criteria

LOS	Delay (Seconds per Vehicle)	
	Signalized	Unsignalized
A	0 to 10	0 to 10
B	>10 to 20	>10 to 15
C	>20 to 35	>15 to 25
D	>35 to 55	>25 to 35
E	>55 to 80	>35 to 50
F	>80	>50

MOE for Alternative 1 geometry under existing 2022, OY 2028 and DY 2050 traffic conditions are presented in **Table 6** through **Table 8**. The existing coordinated cycle length of 120 seconds was maintained for this option.

MOE for Alternative 2 geometry under existing 2022, OY 2028 and DY 2050 traffic conditions are presented in **Table 9** through **Table 11**. Coordination was maintained, but the cycle lengths were optimized for each peak hour to obtain the best results.

Table 5: 2022 Existing Conditions MOE

DE 300 (Wheatley's Pond Road) at Carter Road						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	14.3	B	9.9	A	11.6	B
SWB DE 300	3.0	A	1.6	A	2.5	A
NWB Carter Rd	54.6	D	55.6	E	54.8	D
Intersection	23.1	C	18.7	B	17.6	B
DE 300 (Wheatley's Pond Road) at DE 6 (Smyrna Clayton Boulevard)*						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	22.1	C	9.2	A	15.2	B
SWB DE 300	9.8	A	11.0	B	11.1	B
EB DE 6	53.2	D	39.8	D	43.0	D
WB DE 6	45.8	D	48.0	D	48.1	D
Intersection	26.9	C	19.6	B	23.0	C
DE 6 (Smyrna Clayton Boulevard) at EMS Entrance						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SEB EMS Entrance	0.0	A	10.7	B	12.1	B
EBL DE 6	0.0	A	7.6	A	0.0	A
DE 6 (Smyrna Clayton Boulevard) at Spur						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SB Spur	10.0	B	9.7	A	10.2	B
EBL DE 6	0.0	A	0.0	A	0.0	A
DE 300 (Wheatley's Pond Road) at Spur						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SWBL DE 300	8.9	A	8.3	A	8.4	A
NB Spur	13.2	B	11.0	B	11.5	B

Table 6: Alternative 1 MOE with Existing 2022 Traffic Volumes MOE

DE 300 (Wheatley's Pond Road) at Carter Road [Signalized]						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	17.7	B	11.3	B	13.7	B
SWB DE 300	11.4	B	2.7	A	12.6	B
SEB Prop. Carter Rd Ext.	14.9	B	17.8	B	17.0	B
NWB Carter Rd	40.6	D	47.1	D	47.5	D
Intersection	22.8	C	17.8	B	20.9	C
DE 300 (Wheatley's Pond Road) at DE 6 (Smyrna Clayton Boulevard) [Signalized]						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	7.2	A	9.7	A	6.3	A
SWB DE 300	10.7	B	11.2	B	11.1	B
EB DE 6	54.7	D	39.9	D	44.8	D
WB DE 6	46.2	D	46.8	D	48.1	D
Intersection	20.7	C	19.6	B	20.6	C
DE 6 (Smyrna Clayton Boulevard) at EMS Entrance / Prop. Carter Road Extension [Signalized]						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SEB EMS Entrance	0.0	A	33.0	C	29.0	C
NWB Prop. Carter Rd Ext	42.0	D	39.3	D	47.0	D
EB DE 6	19.5	B	13.0	B	17.5	B
WB DE 6	19.8	B	12.8	B	17.2	B
Intersection	22.8	C	16.5	B	21.8	C
DE 6 (Smyrna Clayton Boulevard) at Spur [Unsignalized]						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SB Spur	10.0	B	9.7	A	10.2	B
EBL DE 6	0.0	A	0.0	A	0.0	A
DE 300 (Wheatley's Pond Road) at Spur [Unsignalized]						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SWB DE 300	9.1	A	8.3	A	8.5	A
NB Spur	13.6	B	11.2	B	11.8	B

Table 7: Alternative 1 MOE with 2028 Traffic Volumes MOE

DE 300 (Wheatley's Pond Road) at Carter Road [Signalized]						
Approach / Intersection	2028 Weekday AM Peak Hour		2028 Weekday Midday Peak Hour		2028 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	18.9	B	11.8	B	15.0	B
SWB DE 300	12.2	B	7.8	A	12.7	B
SEB Prop. Carter Rd Ext.	14.1	B	16.2	B	15.9	B
NWB Carter Rd	40.4	D	43.6	D	46.4	D
Intersection	23.5	C	18.8	B	21.1	C
DE 300 (Wheatley's Pond Road) at DE 6 (Smyrna Clayton Boulevard) [Signalized]						
Approach / Intersection	2028 Weekday AM Peak Hour		2028 Weekday Midday Peak Hour		2028 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	7.0	A	7.6	A	3.6	A
SWB DE 300	10.9	B	11.7	B	11.7	B
EB DE 6	56.9	E	48.7	D	63.9	E
WB DE 6	46.3	D	46.7	D	48.3	D
Intersection	21.1	C	20.5	C	23.6	C
DE 6 (Smyrna Clayton Boulevard) at EMS Entrance / Prop. Carter Road Extension [Signalized]						
Approach / Intersection	2028 Weekday AM Peak Hour		2028 Weekday Midday Peak Hour		2028 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SEB EMS Entrance	0.0	A	31.5	C	28.0	C
NWB Prop. Carter Rd Ext	42.0	D	42.4	D	47.1	D
EB DE 6	20.5	C	14.2	B	19.1	B
WB DE 6	20.3	C	21.1	C	19.6	B
Intersection	23.6	C	20.4	C	23.4	C
DE 6 (Smyrna Clayton Boulevard) at Spur [Unsignalized]						
Approach / Intersection	2028 Weekday AM Peak Hour		2028 Weekday Midday Peak Hour		2028 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SB Spur	10.2	B	9.8	A	10.3	B
EBL DE 6	0.0	A	0.0	A	0.0	A
DE 300 (Wheatley's Pond Road) at Spur [Unsignalized]						
Approach / Intersection	2028 Weekday AM Peak Hour		2028 Weekday Midday Peak Hour		2028 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SWB DE 300	8.9	A	8.3	A	8.4	A
NB Spur	13.6	B	11.0	B	11.5	B

Table 8: Alternative 1 MOE with 2050 Traffic Volumes MOE

DE 300 (Wheatley's Pond Road) at Carter Road [Signalized]						
Approach / Intersection	2050 Weekday AM Peak Hour		2050 Weekday Midday Peak Hour		2050 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	25.3	B	14.9	B	19.1	B
SWB DE 300	17.1	B	11.9	B	16.0	B
SEB Prop. Carter Rd Ext.	13.5	B	14.1	B	13.7	B
NWB Carter Rd	43.7	D	42.0	D	47.0	D
Intersection	28.5	C	20.9	B	24.0	C
DE 300 (Wheatley's Pond Road) at DE 6 (Smyrna Clayton Boulevard) [Signalized]						
Approach / Intersection	2050 Weekday AM Peak Hour		2050 Weekday Midday Peak Hour		2050 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	6.6	A	5.4	A	4.2	A
SWB DE 300	10.9	B	14.6	B	14.4	B
EB DE 6	76.2	E	59.2	E	62.0	E
WB DE 6	47.9	D	47.2	D	49.1	D
Intersection	24.7	C	22.7	C	24.6	C
DE 6 (Smyrna Clayton Boulevard) at EMS Entrance / Prop. Carter Road Extension [Signalized]						
Approach / Intersection	2050 Weekday AM Peak Hour		2050 Weekday Midday Peak Hour		2050 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SEB EMS Entrance	0.0	A	27.2	C	25.0	C
NWB Prop. Carter Rd Ext	45.4	D	41.0	D	47.1	D
EB DE 6	25.5	C	17.6	B	24.3	C
WB DE 6	22.8	C	16.9	C	21.6	C
Intersection	27.6	C	20.5	C	26.9	C
DE 6 (Smyrna Clayton Boulevard) at Spur [Unsignalized]						
Approach / Intersection	2050 Weekday AM Peak Hour		2050 Weekday Midday Peak Hour		2050 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SB Spur	10.7	B	10.2	A	10.9	B
EBL DE 6	0.0	A	0.0	A	0.0	A
DE 300 (Wheatley's Pond Road) at Spur [Unsignalized]						
Approach / Intersection	2050 Weekday AM Peak Hour		2050 Weekday Midday Peak Hour		2050 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SWB DE 300	9.8	A	8.7	A	9.0	A
NB Spur	16.1	C	12.3	B	13.2	B

Table 9: Alternative 2 MOE with Existing 2022 Traffic Volumes MOE

DE 300 (Wheatley's Pond Road) at Carter Road / Realigned DE6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	22.5	C	13.1	B	18.4	B
SWB DE 300	14.9	B	12.1	B	12.5	B
SEB Realigned DE 6	116.1	F	46.0	D	79.4	E
NWB Carter Rd	44.5	D	33.7	C	45.6	D
Intersection	39.6	D	21.3	C	29.9	C
DE 300 (Wheatley's Pond Road) at Realigned DE 6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	7.3	A	6.5	A	7.3	A
SWB DE 300	5.2	A	5.8	A	7.4	A
NWB Realigned DE 6	37.8	D	37.2	D	37.9	D
Intersection	9.5	A	10.3	B	11.5	B
DE 6 (Smyrna Clayton Boulevard) at EMS Entrance						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SB EMS Entrance	0.0	A	19.3	B	16.0	B
EB DE 6	21.7	C	16.6	B	20.8	C
WB DE 6	10.1	B	6.7	A	4.8	A
Intersection	16.8	B	11.9	B	13.7	B

Table 10: Alternative 2 MOE with 2028 Traffic Volumes MOE

DE 300 (Wheatley's Pond Road) at Carter Road / Realigned DE6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2028 Weekday AM Peak Hour		2028 Weekday Midday Peak Hour		2028 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	27.7	C	13.4	B	18.0	B
SWB DE 300	22.1	C	13.1	B	20.9	C
SEB Realigned DE 6	123.3	F	49.8	D	115.9	F
NWB Carter Rd	47.3	D	36.9	D	50.4	D
Intersection	45.0	D	23.0	C	39.1	D
DE 300 (Wheatley's Pond Road) at Realigned DE 6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2028 Weekday AM Peak Hour		2028 Weekday Midday Peak Hour		2028 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	7.2	A	8.2	A	6.7	A
SWB DE 300	5.5	A	6.2	A	8.0	A
NWB Realigned DE 6	43.8	D	37.0	D	38.0	D
Intersection	10.2	B	11.2	B	11.5	B
DE 6 (Smyrna Clayton Boulevard) at EMS Entrance						
Approach / Intersection	2028 Weekday AM Peak Hour		2028 Weekday Midday Peak Hour		2028 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SB EMS Entrance	0.0	A	19.2	B	17.0	B
EB DE 6	25.0	C	16.9	B	21.5	C
WB DE 6	11.7	B	6.7	A	9.8	A
Intersection	19.3	B	12.1	B	16.3	B

Table 11: Alternative 2 MOE with 2050 Traffic Volumes MOE

DE 300 (Wheatley's Pond Road) at Carter Road / Realigned DE6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2050 Weekday AM Peak Hour		2050 Weekday Midday Peak Hour		2050 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	77.8	E	17.2	B	24.1	C
SWB DE 300	54.5	D	22.3	C	46.3	D
SEB Realigned DE 6	142.3	F	81.0	F	124.7	F
NWB Carter Rd	60.8	E	47.1	D	78.7	E
Intersection	77.2	E	33.6	C	56.7	E
DE 300 (Wheatley's Pond Road) at Realigned DE 6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2050 Weekday AM Peak Hour		2050 Weekday Midday Peak Hour		2050 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	9.2	A	7.7	A	8.0	A
SWB DE 300	5.7	A	7.9	A	9.5	A
NWB Realigned DE 6	71.0	E	37.1	D	52.0	D
Intersection	14.0	B	11.6	B	14.5	B
DE 6 (Smyrna Clayton Boulevard) at EMS Entrance						
Approach / Intersection	2050 Weekday AM Peak Hour		2050 Weekday Midday Peak Hour		2050 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SB EMS Entrance	0.0	A	18.5	B	18.5	B
EB DE 6	37.4	D	20.2	B	27.2	C
WB DE 6	18.1	B	8.8	A	14.5	B
Intersection	29.2	C	14.8	B	21.6	C

To improve LOS and delay for the intersection of DE 300 at Carter Road and Realigned DE 6, the eastbound realigned DE 6 and westbound Carter Road approaches were analyzed with exclusive left-turn lanes and shared through/right-turn lanes instead of shared left/through lanes and exclusive right-turn lanes. Alternative 2, modified as described, is referred to as Alternative 2A in this report. MOE for Alternative 2A under existing 2022, OY 2028 and DY 2050 traffic conditions are presented in **Table 12** through **Table 14**. Coordination was maintained, but the cycle lengths were optimized for each peak hour to obtain the best results.

Table 12: Alternative 2A MOE with Existing 2022 Traffic Volumes MOE

DE 300 (Wheatley's Pond Road) at Carter Road / Realigned DE6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	16.1	B	11.5	B	13.4	B
SWB DE 300	13.1	B	13.0	B	14.8	B
SEB Realigned DE 6	71.3	E	40.9	D	57.9	E
NWB Carter Rd	31.6	C	30.5	C	34.2	C
Intersection	27.2	C	19.9	B	24.1	C
DE 300 (Wheatley's Pond Road) at Realigned DE 6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	4.5	A	7.4	A	5.1	A
SWB DE 300	5.2	A	6.0	A	7.4	A
NWB Realigned DE 6	37.8	D	37.5	D	37.9	D
Intersection	7.8	A	10.8	B	10.5	B
DE 6 (Smyrna Clayton Boulevard) at EMS Entrance						
Approach / Intersection	2022 Weekday AM Peak Hour		2022 Weekday Midday Peak Hour		2022 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SB EMS Entrance	0.0	A	21.7	C	21.0	C
EB DE 6	16.7	B	14.5	B	16.6	B
WB DE 6	8.1	A	4.8	A	6.4	A
Intersection	13.1	B	10.0	A	12.1	B

Table 13: Alternative 2A MOE with 2028 Traffic Volumes MOE

DE 300 (Wheatley's Pond Road) at Carter Road / Realigned DE6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2028 Weekday AM Peak Hour		2028 Weekday Midday Peak Hour		2028 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	18.1	C	11.8	B	13.9	B
SWB DE 300	13.5	B	13.6	B	14.8	B
SEB Realigned DE 6	107.0	F	41.7	D	73.6	E
NWB Carter Rd	33.9	C	31.0	C	34.7	C
Intersection	33.8	C	20.4	B	26.6	C
DE 300 (Wheatley's Pond Road) at Realigned DE 6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2028 Weekday AM Peak Hour		2028 Weekday Midday Peak Hour		2028 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	5.1	A	7.7	A	8.4	A
SWB DE 300	5.5	A	6.4	A	8.0	A
NWB Realigned DE 6	38.0	D	37.5	D	38.0	D
Intersection	8.3	A	11.1	B	12.2	B
DE 6 (Smyrna Clayton Boulevard) at EMS Entrance						
Approach / Intersection	2028 Weekday AM Peak Hour		2028 Weekday Midday Peak Hour		2028 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SB EMS Entrance	0.0	A	21.5	C	21.0	C
EB DE 6	17.7	C	14.8	B	17.0	B
WB DE 6	7.7	A	4.9	A	6.9	A
Intersection	13.4	B	10.2	B	12.5	B

Table 14: Alternative 2A MOE with 2050 Traffic Volumes MOE

DE 300 (Wheatley's Pond Road) at Carter Road / Realigned DE6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2050 Weekday AM Peak Hour		2050 Weekday Midday Peak Hour		2050 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	29.5	C	13.7	B	16.6	B
SWB DE 300	20.5	C	18.6	B	21.7	C
SEB Realigned DE 6	118.5	F	58.8	E	108.3	F
NWB Carter Rd	30.7	C	35.0	D	39.4	D
Intersection	40.6	D	25.9	C	35.9	D
DE 300 (Wheatley's Pond Road) at Realigned DE 6 (Smyrna Clayton Boulevard)						
Approach / Intersection	2050 Weekday AM Peak Hour		2050 Weekday Midday Peak Hour		2050 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
NEB DE 300	9.7	A	7.4	A	10.6	B
SWB DE 300	7.0	A	7.9	A	10.8	B
NWB Realigned DE 6	43.9	D	37.1	D	38.5	D
Intersection	12.1	B	11.5	B	14.5	B
DE 6 (Smyrna Clayton Boulevard) at EMS Entrance						
Approach / Intersection	2050 Weekday AM Peak Hour		2050 Weekday Midday Peak Hour		2050 Weekday PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
SB EMS Entrance	0.0	A	21.2	C	20.5	C
EB DE 6	22.7	C	16.6	B	19.2	B
WB DE 6	10.8	B	6.7	A	8.9	A
Intersection	17.7	B	12.0	B	14.6	B

Conclusions

Except for the DE 300 at Realigned DE 6 / Carter Road under Alternative 2 DY 2050 traffic conditions, all intersections under Alternative 1 and Alternative 2 existing and future intersection conditions operate at LOS D or better for all three peak hours analyzed.

At the intersection of DE 300 at Realigned DE 6 / Carter Road, under Alternative 2 DY 2050 traffic conditions, the intersection would operate at LOS E with 77.2 seconds delay for the A.M. peak hour and LOS E with delay of 56.7 seconds delay for P.M. peak hour.

To help improve LOS and delay for the intersection, the eastbound realigned DE 6 and westbound Carter Road approaches were analyzed with exclusive left-turn lanes and shared through/right-turn lanes instead of shared left/through lanes and exclusive right-turn lanes. Under the modified lane configurations (Alternative 2A), A.M. peak hour LOS and delay for the intersection of DE 300 at Realigned DE 6 / Carter Road would be D and 40.6 seconds under OY 2050 traffic conditions. P.M. peak hour LOS and delay would be D and 35.9 seconds.

The conclusions drawn from the analyses are therefore:

1. Alternative 1 can be implemented as proposed without any lane configuration changes or additional auxiliary lanes.
2. If Alternative 2 is adopted as the preferred alternative, reconfiguring the eastbound Realigned DE 6 approach and westbound Carter Road approach from left/through lanes and exclusive right-turn lanes to comprise of one exclusive left-turn lane and one shared through-right lane for each approach may become necessary by design year DY 2050.

Appendix B: Workshop 1 Summary Report

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 1
January 30, 2023
Workshop Summary Report

The first Public Workshop for the Smyrna Clayton Boulevard Intersection Improvement Study was held on January 30, 2023. The Workshop was a live event held at the Citizens' Hose Company from 6:00 pm to 8:00 pm. The Workshop included a brief presentation followed by a plans-display of existing conditions collected to date.

The following provides a summary of the Workshop and corresponding feedback.

Twenty-six people signed in at the workshop, although more appeared to be in attendance. The display boards included:

- Study Area
- Purpose and Need
- Workflow
- Turning Movement Counts – AM Peak Hour, Midday Peak Hour, and PM Peak Hour
- Crash Type and Severity (11/30/2017 – 11/30/2022)
- Annual Crashes and Five-Year Time of Day Crashes (11/30/2017 – 11/30/2022)
- Crashes by Location and Type (11/30/2017 – 11/30/2022)
- Schedule

Attendees were able to review the display boards and ask questions to study team members who were available throughout the workshop. Comment forms were also available with specific questions, as well as space for additional comments.

Eight comment forms were completed and submitted at the workshop.

An addition comment form was mailed to the town.

In addition to those collected the night of the workshop and the one mailed to the town, the comment form was also posted on-line. There was a total of 77 on-line responses to the comment form.

The comment forms completed and returned at the workshop, the comment form mailed to the town, and the results of the on-line comment form are shown below:

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 1
January 30, 2023
Comment Form

1. On average how often do you travel through the Smyrna Clayton Blvd/Wheatleys Pond Rd Intersection?

- ☒ A. Daily
B. Multiple Times per Day
C. Weekly
D. Occasionally

2. On average do you travel more often on Smyrna Clayton Blvd or on Wheatleys pond Rd?

- A. Smyrna Clayton Blvd
☒ B. Wheatleys Pond Rd

3. Do you have concerns about the way this intersection operates?

If so, please describe: (please use the back of this form if you need additional space)

I am concerned for the amount of
accidents.

4. Do you have ideas about how this intersection could be improved?

If so, please describe: (please use the back of this form if you need additional space)

connect carter road to Rt.6.

5. Do you ever use Dickerson St to access Carter Rd (via Wheatleys Pond Rd)?

If so, how often: (please use the back of this form if you need additional space)

yes, multiple times a week.

Additional Comments: (please use the back of this form if you need additional space)

Comments on the back of this paper.

Please provide your contact information to stay informed about this project:

Name: Councilman Ryan Paisley (Clayton)

Address: 17 Clayton Dr. Clayton, DE 19938

Email: RPaisley@clayton-delaware.com

Please hand your comment sheets in at the workshop or mail/email prior to February 24, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Additional comments:

- Turn on the traffic light at nearby Rt. 300 and S. Rodney Street in Clayton, DE, to break ~~a~~ up and stabilize the traffic heading to and from the intersection in question.

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 1
January 30, 2023
Comment Form

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A. Daily
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C. Weekly
D. Occasionally

2. On average do you travel more often on Smyrna Clayton Blvd or on Wheatleys pond Rd?

A. Smyrna Clayton Blvd
B. Wheatleys Pond Rd *> every day*

3. Do you have concerns about the way this intersection operates?

If so, please describe: (please use the back of this form if you need additional space)

Traffic lights No working properly

4. Do you have ideas about how this intersection could be improved?

If so, please describe: (please use the back of this form if you need additional space)

*make light AT Rodney St & Smyrna Industrial
Park Road - put light AT School Lane & 300
(Boss Liquor)*

5. Do you ever use Dickerson St to access Carter Rd (via Wheatleys Pond Rd)?

If so, how often: (please use the back of this form if you need additional space)

No much!

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: *Alex Dias*

Address: *42 Shady Creek Ln, Clayton*

Email: *Adias46@Comcast.net*

Please hand your comment sheets in at the workshop or mail/email prior to February 24, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 1
January 30, 2023
Comment Form

1. On average how often do you travel through the Smyrna Clayton Blvd/Wheatleys Pond Rd Intersection?

- A. Daily
☒ B. Multiple Times per Day
C. Weekly
D. Occasionally

2. On average do you travel more often on Smyrna Clayton Blvd or on Wheatleys pond Rd?

- A. Smyrna Clayton Blvd
☒ B. Wheatleys Pond Rd

3. Do you have concerns about the way this intersection operates?

If so, please describe: (please use the back of this form if you need additional space)

The skew discourages the RT on EB SCB and the LT on NB WPRd.
It also ~~makes~~ impairs sight distance on the NB RT
Finally, it makes for a wide intersection to bicycle through.

4. Do you have ideas about how this intersection could be improved?

If so, please describe: (please use the back of this form if you need additional space)

Reel EB SCB opposite Carter Rd. Square up WB SCB and
add a signalized access there for the ambulance service.

5. Do you ever use Dickerson St to access Carter Rd (via Wheatleys Pond Rd)?

If so, how often: (please use the back of this form if you need additional space)

No but I use it to avoid the WPR/SCB intersection.

Additional Comments: (please use the back of this form if you need additional space)

see above

Please provide your contact information to stay informed about this project:

Name: Bill Brockenbrough

Address: 157 Wheatleys Farm Drive, Clayton, DE 19938

Email: kbrockenbrough@comcast.net

Please hand your comment sheets in at the workshop or mail/email prior to February 24, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 1
January 30, 2023
Comment Form

1. On average how often do you travel through the Smyrna Clayton Blvd/Wheatleys Pond Rd Intersection?

A. Daily

B. Multiple Times per Day

C. Weekly

D. Occasionally

2. On average do you travel more often on Smyrna Clayton Blvd or on Wheatleys pond Rd?

A. Smyrna Clayton Blvd

B. Wheatleys Pond Rd

3. Do you have concerns about the way this intersection operates?

If so, please describe: (please use the back of this form if you need additional space)

yes, People are crazy and just pull out
everybody wants to be first.

4. Do you have ideas about how this intersection could be improved?

If so, please describe: (please use the back of this form if you need additional space)

5. Do you ever use Dickerson St to access Carter Rd (via Wheatleys Pond Rd)?

If so, how often: (please use the back of this form if you need additional space)

NO

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name:

Address:

Email:

Please hand your comment sheets in at the workshop or mail/email prior to February 24, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19777 www.smyrna.delaware.gov



Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 1
January 30, 2023
Comment Form

1. On average how often do you travel through the Smyrna Clayton Blvd/Wheatleys Pond Rd Intersection?

- ☒ A. Daily
B. Multiple Times per Day
C. Weekly
D. Occasionally

2. On average do you travel more often on Smyrna Clayton Blvd or on Wheatleys pond Rd?

- ☒ A. Smyrna Clayton Blvd
B. Wheatleys Pond Rd

3. Do you have concerns about the way this intersection operates?

If so, please describe: (please use the back of this form if you need additional space)

yes. Need to Stop Uturns from 300 onto 6
* Right turns from 6 to 300

4. Do you have ideas about how this intersection could be improved?

If so, please describe: (please use the back of this form if you need additional space)

CIRCLE? Re-alignment for smoother movement
stub road * light syncs from Carter to 6

5. Do you ever use Dickerson St to access Carter Rd (via Wheatleys Pond Rd)?

If so, how often: (please use the back of this form if you need additional space)

NO

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: Dorothy Meers

Address:

Email: dorothy.meers@delaware.gov

Please hand your comment sheets in at the workshop or mail/email prior to February 24, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 1
January 30, 2023
Comment Form

1. On average how often do you travel through the Smyrna Clayton Blvd/Wheatleys Pond Rd Intersection?

☒ A. Daily
B. Multiple Times per Day
C. Weekly
D. Occasionally

2. On average do you travel more often on Smyrna Clayton Blvd or on Wheatleys pond Rd?

☒ A. Smyrna Clayton Blvd
B. Wheatleys Pond Rd

3. Do you have concerns about the way this intersection operates?

If so, please describe: (please use the back of this form if you need additional space)

People making right turns from Smyrna/Clayton Blvd., left
turns from Wheatleys Pond Rd to Smyrna/Clayton Blvd.

4. Do you have ideas about how this intersection could be improved?

If so, please describe: (please use the back of this form if you need additional space)

Making turn lanes w/ signals. Extend Carter Road to
Smyrna/Clayton Blvd.

5. Do you ever use Dickerson St to access Carter Rd (via Wheatleys Pond Rd)?

If so, how often: (please use the back of this form if you need additional space)

Yes, I use it at least once a week if not more.

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: Donella Berryman

Address: 1132 Clayton Greenspring Rd., Smyrna

Email: dbmusic44@aol.com

Please hand your comment sheets in at the workshop or mail/email prior to February 24, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna. DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 1
January 30, 2023
Comment Form

1. On average how often do you travel through the Smyrna Clayton Blvd/Wheatleys Pond Rd Intersection?

A. Daily
B. Multiple Times per Day
C. Weekly
D. Occasionally

2. On average do you travel more often on Smyrna Clayton Blvd or on Wheatleys pond Rd?

A. Smyrna Clayton Blvd
B. Wheatleys Pond Rd Both

3. Do you have concerns about the way this intersection operates?

If so, please describe: (please use the back of this form if you need additional space)

It is a safety hazard for the public

4. Do you have ideas about how this intersection could be improved?

If so, please describe: (please use the back of this form if you need additional space)

I have several

5. Do you ever use Dickerson St to access Carter Rd (via Wheatleys Pond Rd)?

If so, how often: (please use the back of this form if you need additional space)

Yes

Additional Comments: (please use the back of this form if you need additional space)

Any comments I prefer to discuss in person.

Please provide your contact information to stay informed about this project:

Name: Bradley M. Gosch - Director of the American Legion Ambulance Sta
Address: 900 Smyrna - Clayton Blvd
Email: Bradley.Gosch@Ambulance64.org

Please hand your comment sheets in at the workshop or mail/email prior to February 24, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna. DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 1
January 30, 2023
Comment Form

1. On average how often do you travel through the Smyrna Clayton Blvd/Wheatleys Pond Rd Intersection?

- A. Daily
B. Multiple Times per Day
C. Weekly
☒ D. Occasionally

2. On average do you travel more often on Smyrna Clayton Blvd or on Wheatleys pond Rd?

- A. Smyrna Clayton Blvd
☒ B. Wheatleys Pond Rd

3. Do you have concerns about the way this intersection operates?

If so, please describe: (please use the back of this form if you need additional space)

*Cars stuck in traffic, have to make a sharp turn
from Clayton to Wheatley Pond Rd and vice versa*

4. Do you have ideas about how this intersection could be improved?

If so, please describe: (please use the back of this form if you need additional space)

don't know what the answer is

5. Do you ever use Dickerson St to access Carter Rd (via Wheatleys Pond Rd)?

If so, how often: (please use the back of this form if you need additional space)

No

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: *Joan C. Lehart*
Address: *430 Mulberry St*
Email: *JoDocala@gmail.com*

Please hand your comment sheets in at the workshop or mail/email prior to February 24, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 1
January 30, 2023
Comment Form

1. On average how often do you travel through the Smyrna Clayton Blvd/Wheatleys Pond Rd Intersection?

- ☒ A. Daily
B. Multiple Times per Day
C. Weekly
D. Occasionally

2. On average do you travel more often on Smyrna Clayton Blvd or on Wheatleys pond Rd?

- A. Smyrna Clayton Blvd
☒ B. Wheatleys Pond Rd

3. Do you have concerns about the way this intersection operates?

If so, please describe: (please use the back of this form if you need additional space)

Current concerns with the u-turns at the intersections.

4. Do you have ideas about how this intersection could be improved?

If so, please describe: (please use the back of this form if you need additional space)

Eliminating the ability to u-turn and make straight ways that eliminate the crossover intersection.

5. Do you ever use Dickerson St to access Carter Rd (via Wheatleys Pond Rd)?

If so, how often: (please use the back of this form if you need additional space)

Yes - avoid during AM and PM peaks due volume of traffic on 300 and blind spots.

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: *Kent Robinson*

Address: *80 Monrovia Ave. Smyrna, DE*

Email: *kent.robinson@smyrna.k12.de.us*

Please hand your comment sheets in at the workshop or mail/email prior to February 24, 2023 to:

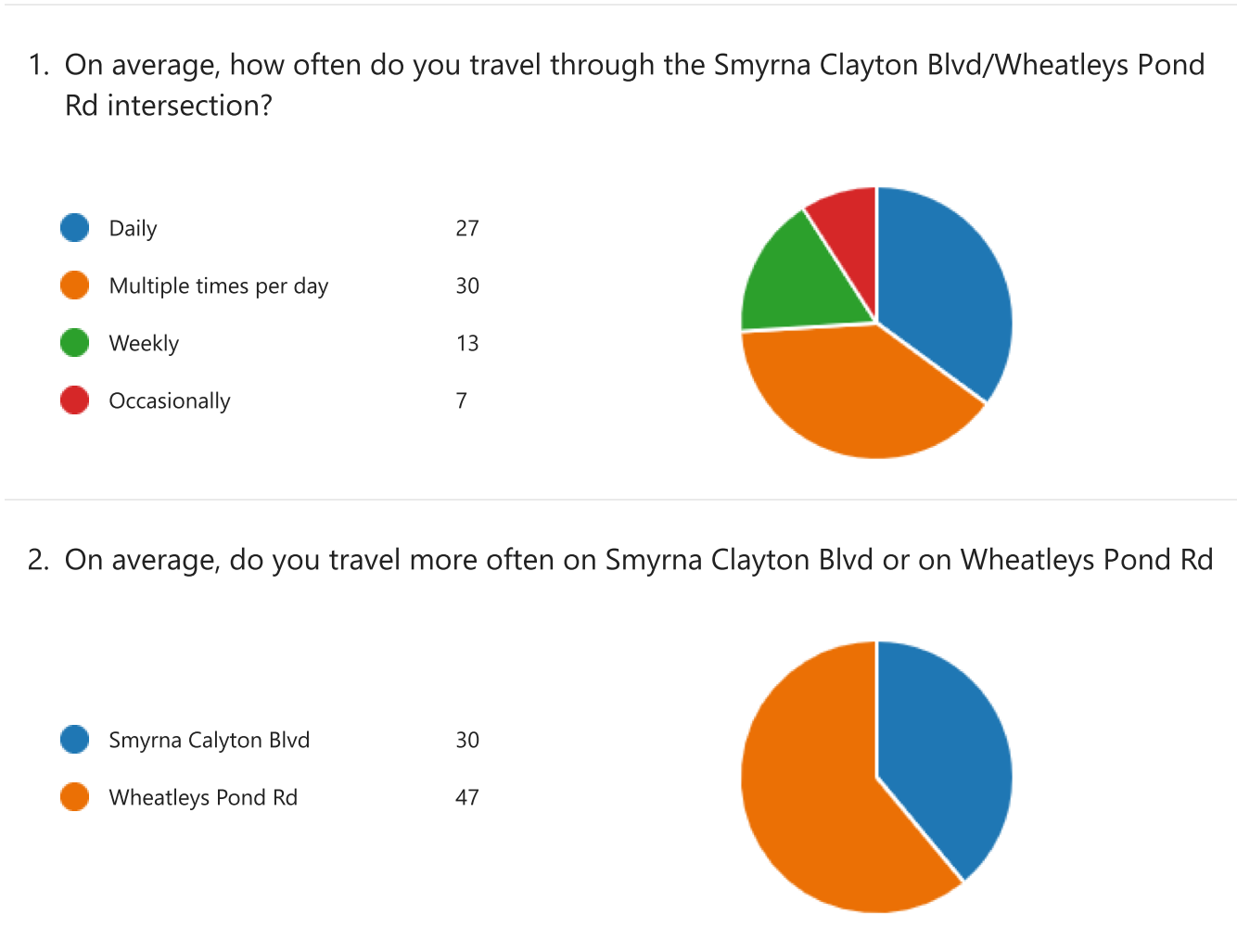
Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Blvd Intersection Study

77	07:01	Closed
Responses	Average time to complete	Status



3. Do you have ideas about how this intersection operates? If so, please describe:

1	Leave it alone
2	Lived here all my life and was never aware you could make you turns (wheatleys pond back to smyrna Clayton). This is extremely dangerous since people now fly through that intersection. People pass these uturn cars in the turn lane.
3	Issues with people turning without the option of dedicated turn lanes.
4	Separate right hand turn lane on Smyrna Clayton heading towards Smyrna would avoid some backups.
5	It's a stupid intersection. I was born and raised in Smyrna. Have lived here my entire life and I hate this intersection.
6	It's difficult.
7	There are worse intersections in our town - like getting in and out of the ACME and Dollar General shopping center.
8	The only thing that messes up the traffic flow is people making left turns heading east on Wheatleys Pond Rd. The traffic is not that bad otherwise.
9	It has a traffic light. People run it all. the. time. In my experience, equally passenger vehicles and commercial tractor/trailers. If everyone stopped at the red lights, it would be fine.
10	Honestly, we lifelong residents do not have a problem with this intersection. It works fine.
11	The intersection is basically an X but I believe has left turn arrows at each light k along with a regular light for those going "straight" which is a bit confusing at that intersection since it isn't truly straight.
12	Wheatleys Pond Rd has priority for traffic making motorists on Smyrna Clayton Blvd have long waits. Alot of cars want to turn right from Smyrna Clayton Blvd E/B onto Wheatleys Pond Rd WB causing issues and passing cars wait at light on shoulder
13	Far too much traffic during certain hours of the day. Particularly around 4:30pm.
14	The option to make a uturn that is allowed at x where all four streets meet coming from wheatlies pond to glenwood ave needs to be eliminated. I watch people daily almost slam into the back of someone because the car in front of them gets in the rite turn lane to go into down town Smyrna because they don't see the car is stopped to make a uturn. Especially if it's a high sitting truck in front of them. The light at carter

	rd and the x are to close together and it almost cause an accident daily. There needs to be a cross over straight across to carters toad. That hole intersection needs to be widened on the side where the hospital is. Need to take into consideration of buying the empty property on the corner of carter road across from the hospital to make this bigger it's to small with tractor trailers that take up the length between the two lights rite there. Making it wider to make a turn lane to go left across from carter road would help with the no longer having the rite to make a u turn. When someone flies off cater road making a rite and slams on there brakes to make a u turn to go to Clayton is going to get someone killed. There also needs to be a light at the turn to go into Clayton at wheatlys pond before the rail road tracks how many accidents or more people being killed there needs to happen before one is put in.
15	No
16	Yes, poorly. It is a nightmare
17	It operates fine except for people trying to make a left hand turn at the intersection
18	Yes. Both have a lane going sorta north/south and east/west with a light at the intersection.
19	Yes, I live off Carter Road and have a business on Wheatleys Pond Road.
20	It is very chaotic
21	Yes
22	Yes, I do know how this intersection is SUPPOSE TO operate, but when drivers ignore the signal lights, then they create problems.
23	No
24	It is not safe for left turns for east-bound, or, right turns from SC Blvd to Wheatley's.
25	Lights
26	That light along with the signal at Carter Rd do not operate efficiently, especially during rush hours.
27	It is a hazardous intersection because motorists are making u-turns where no u-turns were made. Too many directions to check out.
28	Yes. It's not safe.
29	It's a very dangerous and busy intersection both roads

30	300 has priority
31	The intersection works fine for traffic moving straight or making shallow turns. The intersection is less kind to those making sharp turns of either direction.
32	Been fine
33	No turning towards clayton from wheatlys pond road at light. Or a turn Lane onto Wheatleys from clayton in the grass median.
34	I have never had an issue here
35	Yes. I have minimal problems making a right hand turn from Smyrna/ Clayton Blvd onto Wheatleys Pond Rd, however I avoid it if I need to turn left from Wheatleys Pond Rd onto Smyrna/Clayton Blvd.
36	This intersection operates very poorly in the mornings with people turning left from wheatleys pond onto the road continuing to Smyrna Clayton Blvd. This causes backups on wheatleys pond and results in dangerous situations where cars AND 18 wheelers going around them using the right turn lane. Sometimes it can be a car going around that is 4 or 5 cars back of the turning car but once the turning car turns, the traffic moves and then you have a situation where the idiot who got in the turn lane now has to hurry up and get back over in the lane continuing on Wheatleys pond which usually results in them cutting another car off. Also people turning right onto wheatleys pond from Carter road frequently do not stop for the stop sign, especially in mornings.
37	To many people hold up traffic by turning left or right going into town of smyrna or Clayton depending on the direction they are traveling
38	its a cluster
39	Yes, follow traffic signs and signals
40	Bad design from the beginning.
41	Timing of the traffic lights at this intersection and the Carter Rd intersection might help some at walmart distribution and school dismissal times
42	Poorly turns are hard
43	Anybody making a left turn onto smyrna clayton blvd causes huge traffic jams and people unsafely pass the turning vehicles in the turn lane.
44	The acute angle makes turning movements confusing and difficult to both new and experienced drivers.

45	A lot of congestion for and from cars trying to turn right onto Rte. 300 from eastbound Rte. 6.
46	Like shit
47	no
48	none
49	The intersection is dangerous because of the proximity of the Carter signal. I have seen where the signals have been confused by 18-wheelers and they have run red lights as a result. Lights are not timed to support the flow of traffic between the two signals.
50	I think there are some small glitches with the U-Turn issues, but I feel in peak hours the problem at hand is much bigger than the Smyrna/Clayton Blvd Intersection. I feel the problem extends all the way to the highway. I always seem to flow good through the Smyrna Clayton Blvd intersection heading to rt 13 in the afternoon but 95% of the time I hit traffic just past the dollar store and its bumper to bumper and at times up to 10-15min just to get to the highway.

4. Do you have ideas about how this intersection could be improved? If so, please describe:

1	Some sort of way to stop these people from making u turns
2	Add turn lanes
3	Put a roundabout
4	I think it would help to make a right turn lane/straight only Connection using the carter rd and Wheatley's pond road light with a connector to Smyrna Clayton boulevard. I hope that makes sense. Essentially making a triangle.
5	Go straight across from Carters rd to Clayton rd. Would help alot.
6	A turn lane to turn left from 300 to 6 (Wheatleys Pond Rd to Smyrna Clayton Blvd Clayton side).
7	Maybe more obvious signage so people know when they have to yield.

8	No left turn heading east on Wheatleys Pond Rd to Smyrna Clayton Blvd. Make the right onto the connection road at the triangle (in front of Family Dollar) to Smyrna Clayton Blvd.
9	The right on red lane from 300 heading west onto Smyrna Clayton Blvd (in front of the ambulance station) is insane. No one looks! I travel several times a day from downtown Smyrna (on route 6) and several times (recently) have nearly been creamed by people coming out of that turn lane who don't look for oncoming traffic. It should not be a yield. It should be right after stop.
10	Please DO NOT consider a traffic circle. No one knows how to use them & it will only create more problems & accidents. With the American Legion Ambulance Station 64 basically at this intersection it would make more sense to allow an option to turn (or for them to go straight) from Smyrna Clayton Blvd to Wheatleys Pond Road/Carter allowing EMS quicker response times to Wheatleys Pond Road/Carter Roads. If an extension could be added through the old Gina's sub lot in the middle, that would be helpful. Conversely, then when at the light from Carter Road the ambulances could go straight through to Smyrna Clayton Blvd and then into their station.
11	Install new road from Smyrna Clayton Blvd to Wheatleys Pond Rd to the light at N Carter Rd.
12	See above
13	There needs to be a light at when turning onto Wheatley's Pond road from Clayton Elem
14	I would like a turn lane coming from Clayton on Smyrna Clayton rd turning right onto Wheatley pond road with a yield sign possibly.
15	Possibly a wider lane for cars turning right off Wheatleys onto smyrna Clayton heading into smyrna
16	No
17	No left on to Rt 6 and no right turn to Rt 300. He ave seen too many near missed. Left an right turns also backlog traffic
18	Make a round a bout
19	I believe this intersection could be improved by a.) No longer allowing people to make u-turns from route 6 onto 300 and vice versa. I, personally, have witnessed a number of near misses (regarding accidents). This is also causing traffic to back up on route 6 due to cars being unable to proceed through the green light as people are making u-turns. B.) Allowing the green light for route 6 to stay green for a longer period of time. Currently, when the light turns green, only 3-4 cars are able to make it

	through (but this depends if busses are at the light and how many people are making a u-turn.)
20	Stop left hand turns at the light
21	No turn on red. As a pedestrian even with the new cross walk it's dangerous. Cars barely yield while turning. Need a green arrow for left turns going toward Clayton. Everyone passes in the right turn lane.
22	Yes. Left turning signals for the left lanes each way
23	No
24	Make a left turn lane from Wheatleys Pond Rd. to Clayton at intersection
25	From carter rd cut through the grass area to rt 6. Do not allow left turns from wheatly pond to rt 6 nor right turns from rt 6 to wheatlys pond rd. No circles, not safe for emergency responders.
26	You need to have a left turn lane. I've lived in this area my whole and in the past 15 years with new developments....this is becoming worse and worse. People never used to make a left turn from 300 to Smyrna/Clayton Blvd. Now it's constant.
27	No Walmart tractor trailers on 300 in the Smyrna Business district....expand Sunnyside road and route them to 300 to walmart
28	Stop allowing east bound traffic on Rt 300 (Wheatley Rd) to make left-hand turns onto Smyrna-Clayton Blvd. This is at the intersection of Rt 300 and Rt 6. I have seen drivers in such a big hurry that they cut in front of on-coming traffic. STOP THE LEFT-HAND TURNS FROM RT 300 ONTO RT 6.
29	Stop the u-turns from wheatleys pond road onto Smyrna Clayton blvd.
30	No
31	Left turn lane. Better right turn lane.
32	Extend Carter Rd so turns cab be made from SC BLVD.
33	No
34	Not allow left turns from EB Wheatley's Pond onto WB Smyrna-Clayton Blvd as they back up EB Wheatley's Pond. Also it would be nice to install tubular markers to keep vehicles from attempting to turn right from EB Smyrna-Clayton Blvd onto WB Wheatleys Pond.

35	Do away with u-turns for one.
36	Put up turn lights and change how to enter or exit from Smyrna Clayton Blvd.
37	The only thing I can think of is a red light
38	Change the timing of signal
39	Put a right turn lane on Smyrna Clayton Blvd so you can go south on Carter Rd at the intersection/red light for Rt 300 and Carter Rd, and I think this would help Ambulance 64 make access to South Carter Rd and the Smyrna Clayton ER a lot easier
40	Stop letting people u turn!!
41	Dedicated left turn arrows from DE 300 onto DE 6 (the sharp turn!) would be extremely beneficial and seem to be the most glaring absence. Likewise, a right turn lane or cutoff from DE 6 E to DE 300 W would ease gridlock at that turn considerably.
42	Maybe a little wider turn lanes
43	I'd say the timing of the light is the only issue. Maybe a bit longer for Wheatley pond traffic to go thru so it doesn't block carter.
44	For simplicity, making a left turn lane from Wheatleys Pond Rd onto Smyrna/Clayton Blvd. However, closing that intersection for an extended time for construction may be more inconvenient than its current state. Perhaps making the right lane a straight/right turn and the left lane left turn only (with a left arrow) would be even simpler and shorten the need for an extended closure for construction.
45	No left turns from Wheatleys pond onto Smyrna Clayton Blvd. This is an awkward turn as it is and should never be allowed. Otherwise the road needs to be widened to allow for an actual turn lane where you only turn on a green arrow.
46	A circle
47	no round about
48	Left turn lane for going east
49	Prevent left turns for E/B traffic on Wheatleys Pond Road until the road is redesigned and have both traffic lights synchronized to prevent backups.
50	Not allowing a left hand turn from Wheatleys Pond Road into Clayton! I have almost had the front of my car taken off multiple times as I am in the left hand turn lane coming out of Clayton onto Glenwood Ave. Yes, I am behind and not over the line at the light.

51	Right turn lane onto W Wheatley pond road
52	Circle might work
53	Make this intersection square as are all else.
54	Make them take Dickerson Street. Make no left turns onto smyrna clayton blvd and please actually have officers enforcing this change.
55	Looks like a good spot to consider a traffic circle if traffic counts warrant one.
56	Establish a right turn lane for eastbound traffic on Rte. 6 (Smyrna-Clayton Blvd) to connect to the Carter Rd. Intersection to avoid congestion at the main intersection.
57	no
58	none
59	Consider eliminating the signal at Smyrna Clayton and Wheatleys Pond and consolidate to the one signal at Carter Road. Vehicles traveling from Downtown Smyrna on Route 6 to Clayton will need to use South St. or other street to Carter Rd to continue on Smyrna Clayton Blvd.
60	Having Carter Road extend straight across is a great idea. Lights would all need to be timed together not to create more issues.

5. Do you ever use Dickerson St to access Carter Rd (via Wheatleys Pond Rd)? If so, how often?

1	Sometimes.
2	Yes, daily
3	Yes
4	Sometimes when the traffic is bad or It I am Traveling from carter rd into Clayton. I hate making a left from wheatleys pond rd to Smyrna Clayton boulevard
5	Only once in awhile. It's hard to get out onto Wheatleys pond rd.
6	Yes daily.
7	No, never

8	Only in the mornings driving a school bus
9	No.
10	Yes daily from Wheatleys into Clayton. Never from Clayton toward Wheatleys Pond Road. The traffic in both directions makes that impossible and not worth the wait. Everyone goes instead to the intersection of Smyrna Clayton & Wheatleys and makes that very sharp right before continuing onto Wheatleys/Carter etc.
11	100% of the time when in need to go from Carter Rd into Clayton or vice versa
12	Yes if I am going to N Carter Rd but it's kind of a blind corner.
13	No
14	Yes! Whenever I need to bypass the intersection when coming from Clayton. It's just easier.
15	No it's too small and trying to turn right onto it is horrific along with the people turning left off of it
16	No
17	No
18	Occasionally when coming through town of Clayton. Avoid it during rush hour and go to the light on the blvd
19	Yes if traffic is heavy near the train crossing.
20	Yes. Occasionally
21	Occasionally
22	No
23	I use Dickerson street when coming from 300 and need to go to 6 and vice versa, as this is what Dickerson street should be used for. Although, it is difficult getting onto 300 from this direction due to all the traffic on 300. Which also needs to be addressed.
24	No
25	Almost always since we are usually coming from Carter road and it's easier than making a left at the light.
26	No

27	No
28	Every day coming to & from Smyrna High School
29	No
30	Yes every day
31	Multiple times per day
32	Yes, weekly
33	Occasionally, but not often.
34	Yes whenever I am on Smyrna Clayton blvd and need to get to Carter road and when I am on Wheatley's pond rd and need to head to Clayton.
35	Yes daily
36	Yes and vice versa
37	Yes. At least once a week.
38	Yes. Less than 5 times per year.
39	Yes but I'm off peak hours and only typically turn right to access the Smyrna Business Park.
40	Yes, about twice a month.
41	No
42	Used to use it all the time. But the traffic is so heavy anymore with all the developments. It's impossible to get out at Dickerson Street onto Weekly's pond. Road to Carter Road.
43	Not often
44	Yes it I need to go south on Carter Rd, not to often
45	Daily
46	Seldom.
47	No

48	I use this road if I'm heading into clayton. I refuse to turn left at the big intersection because it's a nightmare
49	Yes, but to avoid school lane. That's more of an issue than anything.
50	I typically do not use it to access Carter Rd from Clayton as I don't love that left hand turn either, however I use it daily to go from Carter Rd into Clayton to avoid the left hand turn from Wheatleys Pond Rd onto Smyrna/Clayton Blvd.
51	No
52	Yes because I believe that's how it should be used instead of holding traffic up
53	no
54	I use this at least 2 X a week. Only because if you School Ln would be easier for me, but during morning and evening rush hour there is no way you are getting on Route 300. I strongly feel a traffic light should be put at School Lane and Route 300.
55	Yes, easier way to get to clayton
56	No
57	Multiple times to access Carter Road from Clayton
58	Yes. Daily to avoid this intersection
59	Once or twice a year to go look at Clayton's Christmas lights.
60	I use Dickerson daily, everytime i need to get between the 2 streets in that area.
61	Rarely, difficult to make a left onto Wheatleys Pond Rd
62	No. I never have.
63	No
64	yes, occasionally.
65	no
66	No
67	No

6. Additional Comments:

1	Speed limits could possibly be reduced as well since it's right in town.
2	The light at Carter road is not timed with the light at 300 & 6
3	I travel from Wheatleys Pond Road and turn right at the intersection (heading into town) in question to go home every day. I am always so scared that someone trying to go around a vehicle waiting to turn left will not pay attention and hit me. I have a 1 year old and 3 month old that I always have with me. And it gives me anxiety every time. Hoping a solution is found!
4	I drive these roads every day to bring my daughter to and from Clayton elementary. These roads are not an issue compared to the Glenwood shopping center and duck Creek turning onto Clayton's main street.
5	Enforce the law and this intersection would be fine. Or teach people how to follow the rules of the road. Too many people forgot how to drive during Covid.
6	Again, please do not install a traffic circle. No one likes them and they only create chaos.
7	The flashing light at the entrance to Smyrna Business Park needs to be turned onto full function. Traffic is a nightmare there too.
8	We really need a light at school lane and wheatleys pond but I'm guessing that's Clayton??
9	You need red light cameras at the Wawa rt 1 exit on 13 and also the next light at carter road and del-one, you really need to get in touch with DelDot about the light at Smyrna lipsic and sunny side red light cameras would help show how so many accidents are caused there.
10	Have more police patrols in this area, to stop the inattentive drivers.
11	A sidewalk on the right side from the ambulance station into smyrna. People walking are always in that turn lane not walking on the curb. A light by the railroad tracks on either road because you can't turn there safely onto Wheatley heading to smyrna.
12	N/A
13	Police need to monitor the intersection. No one stops at a red light on the right turn lane.

14	Make the lights work better together. Get trucks to use a different route (Duck Creek Parkway).
15	Even with no changes, just having police stop people from passing in the turn lane (by writing tickets) would help with safety.
16	Thank you for looking at this intersection.
17	none
18	I will be significantly impacted by the change based on where I live. I am vested in the outcome and hope a balanced safe solution is developed.

Appendix C: Workshop 2 Summary Report

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Workshop Summary Report

The second Public Workshop for the Smyrna Clayton Boulevard Intersection Improvement Study was held on March 30, 2023. The Workshop was a live event held at the Citizens' Hose Company from 6:00 pm to 7:30 pm. The Workshop included a brief presentation followed by a plans-display of existing conditions collected and two conceptual improvement options.

The following provides a summary of the Workshop and corresponding feedback.

Twenty-five people signed in at the workshop, although more appeared to be in attendance. The display boards included:

- Study Area
- Purpose and Need
- Workflow
- Annual Crashes and Five-Year Time of Day Crashes (11/30/2017 – 11/30/2022)
- Crashes by Location and Type (11/30/2017 – 11/30/2022)
- Existing Intersection
- Improvement Option 1
- Improvement Option 2
- Schedule

Attendees were able to review the display boards and ask questions to study team members who were available throughout the workshop. Comment forms were also available with specific questions, as well as space for additional comments.

Twelve comment forms were completed and submitted at the workshop.

In addition to those collected the night of the workshop, the comment form was also posted online between April 10, 2023, and May 10, 2023, and one additional response was received. A second survey was conducted by the Town as part of their Thursday Tidbits, a community newsletter which was emailed to over 5,000 customers. This survey was sent on May 4, 2023, and 153 responses were collected through May 19, 2023.

The comment forms completed and returned at the workshop, as well as the results from both online surveys are shown below:

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Comment Form

1. Do you support Option 1?

- ☒ A. Yes
B. No
C. Unsure

Comments: _____

2. Do you support Option 2?

- A. Yes
☒ B. No
C. Unsure

Comments: _____

3. Do you prefer another configuration for this intersection?

Comments: option 1 allow for Future grow

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: Gerald Brown

Address: 2 Trouble lane

Email: GBrown@Smyrna.delaware.gov

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Comment Form

1. Do you support Option 1?

- A. Yes
☒ B. No
C. Unsure

Comments: Too Much Possibilities of Traffic Congestion
I see issues at the crossover from Clayton Road to Hwy 70
Smyrna Clayton Blvd.

2. Do you support Option 2?

- ☒ A. Yes
B. No
C. Unsure

Comments: This option provides smoother Traffic Flow
from 300 Hwy and safer travels from Commerce St

3. Do you prefer another configuration for this intersection?

Comments: NO

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: Robert C Johnson (Mayor)

Address: 719 Dorchester Ct., Smyrna, DE 19977

Email: RobCJS28@comcast.net

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Comment Form

1. Do you support Option 1?

A. Yes

B. No

C. Unsure

Comments: more direct but
2 lights in a row (very close)

2. Do you support Option 2?

A. Yes

B. No

C. Unsure

Comments: _____

3. Do you prefer another configuration for this intersection?

Comments: _____

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: Kathleen P. Watts

Address: 57 Nugent Loop - Smyrna - Towne & Country

Email: kayphilly4@icloud.com

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Comment Form

1. Do you support Option 1?

A. Yes

B. No

C. Unsure

Comments: The three intersections would be very close to each other and it seems likely that they would lock up during peak periods. Also, it does not fix the skew for the RT from eastbound SR 300 into Smyrna (downtown) with a single signal controller and a long cycle length, this option could work but it would not be efficient.

2. Do you support Option 2?

A. Yes

B. No

C. Unsure

Comments: The intersection spacing, while still close, would be improved. Also, the skew for the RT from eastbound SR 300 into downtown Smyrna would be remedied

3. Do you prefer another configuration for this intersection?

Comments: Look at modifying Option 2 by shifting the east (new) intersection farther east to increase the intersection spacing. This change could also help with fire company concerns about geometry and save the propane storage tanks (moving east of them)

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: Bill Brockenbrough

Address: 157 Whelan's Farm Dr, Clayton, DE 19938

Email: lbrockenbrough@comcast.net

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Comment Form

1. Do you support Option 1?

- A. Yes
☒ B. No
C. Unsure

Comments: _____

2. Do you support Option 2?

- ☒ A. Yes
B. No
C. Unsure

Comments: _____

3. Do you prefer another configuration for this intersection?

Comments: NO _____

Additional Comments: (please use the back of this form if you need additional space)

This is a long overdue improvement that should
be a priority to get done. _____

Please provide your contact information to stay informed about this project:

Name: CHUCK MANKIN

Address: 1364 TWIN WILLOWS RD SMYRNA DE 19771

Email: CHUCK.MANKIN@GMAIL.COM

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Comment Form

1. Do you support Option 1?

☒ A. Yes

☐ B. No

☐ C. Unsure

Comments: More confusing of the two options though

2. Do you support Option 2?

☒ A. Yes

☐ B. No

☐ C. Unsure

Comments: Think this is better option. will definitely
make for a safer set of intersection.
will stop lefts off 300 + rights off 6

3. Do you prefer another configuration for this intersection?

Comments: _____

Additional Comments: (please use the back of this form if you need additional space)

thanks for tackling this intersection. Definitely
necessary
while I think either will work - I support Option 2

Please provide your contact information to stay informed about this project:

Name: Dorothy Morris
Address: 2797 Millington Rd
Email: dorothy.morris@delaware.gov

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Comment Form

1. Do you support Option 1?

- ☒ A. Yes
☐ B. No
☐ C. Unsure

Comments: BUT option 2 will create less
confusion

2. Do you support Option 2?

- ☒ A. Yes
☐ B. No
☐ C. Unsure

Comments: Best option

3. Do you prefer another configuration for this intersection?

Comments: NO

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: B Franklin Morris IV
Address: 2797 Millington Rd Clayton Del 19938
Email: bfmorriss@qsplundh.com

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Comment Form

1. Do you support Option 1?

A. Yes

B. No

☒ C. Unsure

Comments: _____

2. Do you support Option 2?

☒ A. Yes

B. No

C. Unsure

Comments: This alignment appears to correct both the problem areas as long as the signals are coinciding with the traffic flow since the current configuration on Commerce Smyrna Clayton Blvd impede flow at Carter & Wheatleys Pond Rd.

3. Do you prefer another configuration for this intersection?

Comments: _____

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: Arlene Collier-Mankin

Address: 4941 Wheatleys Pond Rd Smyrna DE 19977 (VFW Post 8801)

Email: angelladya@gmail.com

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Comment Form

1. Do you support Option 1?

- A. Yes
☒ B. No
C. Unsure

Comments: _____

2. Do you support Option 2?

- ☒ A. Yes
B. No
C. Unsure

Comments: _____

3. Do you prefer another configuration for this intersection?

Comments: NO! _____

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: Walter (m a kid) Valencik.
Address: 121 W South St.
Email: _____

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Comment Form

1. Do you support Option 1?

- A. Yes
B. No
C. Unsure

Comments: I think the idea of a new signal with add
to congestion

2. Do you support Option 2?

- A. Yes
B. No
C. Unsure

Comments: I use the turn on to W. Glenwood
from Smyrna / Clayton Blvd more often and like
the idea of the signaled intersection here which will be
safer than the current yield.

3. Do you prefer another configuration for this intersection?

Comments: I like the idea of a round about at the V
turn btwn W. Denny's Rd + Wheatleys Pond Rd
This was the intersection with the most crashes
and would be safer

Additional Comments: (please use the back of this form if you need additional space)

IS there space for a separated bike lane?
protected
Can a round about be used
at the intersection instead?

Please provide your contact information to stay informed about this project:

Name: Kelly Valencik
Address: 124 W. South St
Email: kelvalencik@gmail.com

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner
jrothwell@smyrna.delaware.gov O: 302.389.2332
22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study

Public Workshop 2

March 30, 2023

Comment Form

1. Do you support Option 1?

A. Yes

B. No

C. Unsure

Comments: _____

2. Do you support Option 2?

A. Yes

B. No

C. Unsure

Comments: I like the open land possibilities
Alley Behind property.

3. Do you prefer another configuration for this intersection?

Comments: _____

Additional Comments: (please use the back of this form if you need additional space)

Please take into consideration the residents that
will be impacted by any deferral.

Can we make an alley behind existing properties-give them
20 feet for driveway &
thoroughfare. So they
can enter and leave
property @ a light.

Please provide your contact information to stay informed about this project:

Name: Jabitha Gott

Address: 43 Woodlawn Dr Smyrna, Delaware

Email: gottcouncil@gmail.com

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Boulevard Intersection Improvement Study
Public Workshop 2
March 30, 2023
Comment Form

1. Do you support Option 1?

A. Yes

B. No

☒ C. Unsure

Comments: _____

2. Do you support Option 2?

☒ A. Yes

B. No

C. Unsure

Comments: _____

3. Do you prefer another configuration for this intersection?

Comments: _____

Additional Comments: (please use the back of this form if you need additional space)

Please provide your contact information to stay informed about this project:

Name: *Robert Waterfield*

Address: *3561 Smyrna Lipsic Road*

Email: *Smyrna Del 19977*

Please hand your comment sheets in at the workshop or mail/email prior to April 27, 2023 to:

Jeremy Rothwell – Smyrna Senior Planner

jrothwell@smyrna.delaware.gov O: 302.389.2332

22 S. Main St Smyrna, DE 19977 www.smyrna.delaware.gov

Smyrna Clayton Blvd Intersection Improvement Study

Workshop 2

1	00:34	Closed
Responses	Average time to complete	Status

1. Do you support Option 1

Yes


0

No

1

Unsure

0



2. Do you support Option 2

Yes

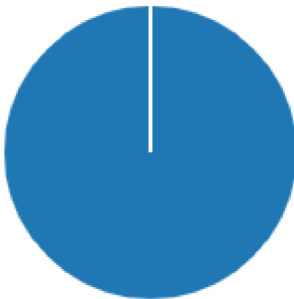
1

No

0

Unsure

0



3. Do you prefer another configuration for this intersection?

0

Responses

Latest Responses

4. Addition Comments

0

Responses

Latest Responses

Default Report


Explore the data behind your survey responses. Gain a better perspective of your survey data and uncover insights for further planning.

 Visited


544

 Started

158

 Avg. Time to Complete

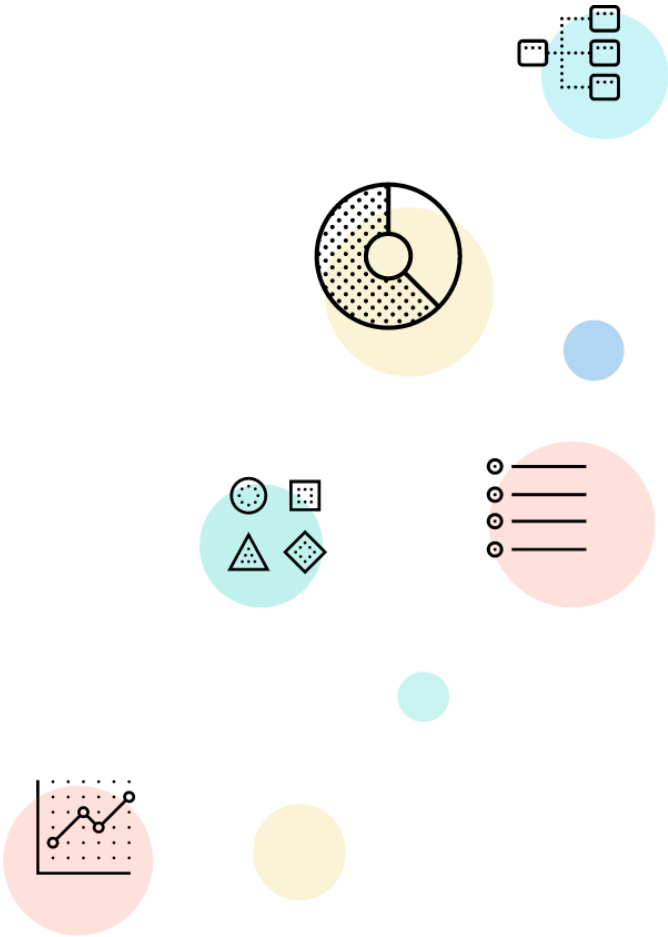
2m

 Completed

158

 Completion Rate

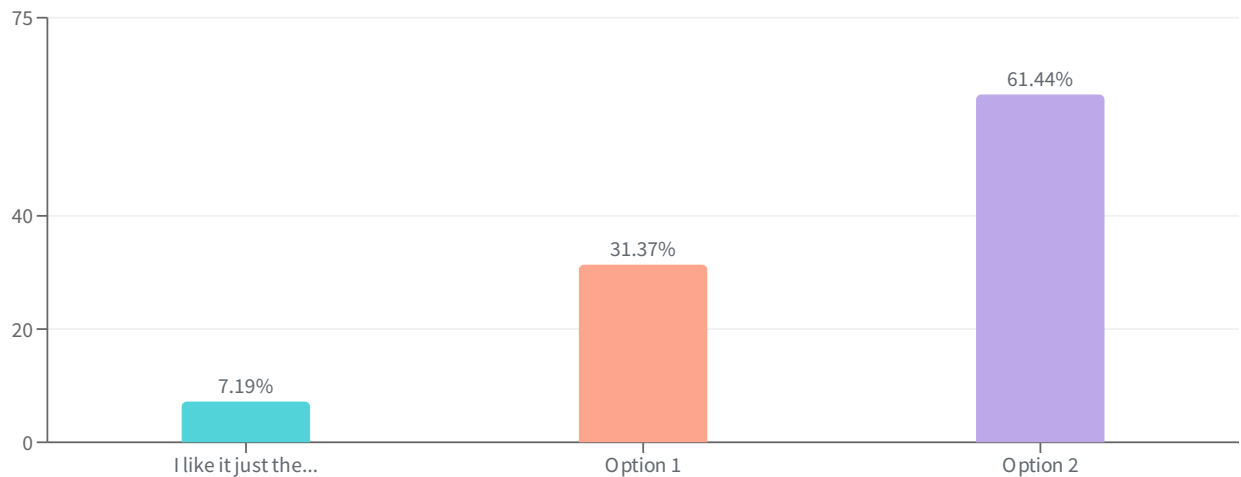
100.00%



QUESTION 01 | PICTURE CHOICE

Which option for improvement of Smyrna/Clayton Blvd Intersection do you prefer?

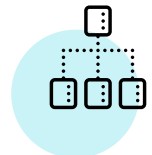
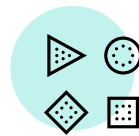
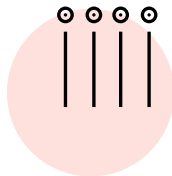
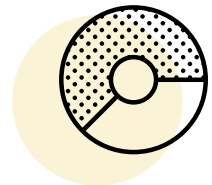
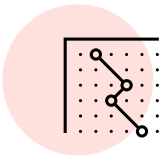
Answered: **153** Skipped: **4**



ANSWER CHOICES ▾	RESPONSES ▾	RESPONSE PERCENTAGE ▾
I like it just the way it is!	11	7.19 %
Option 1	48	31.37 %
Option 2	94	61.44 %

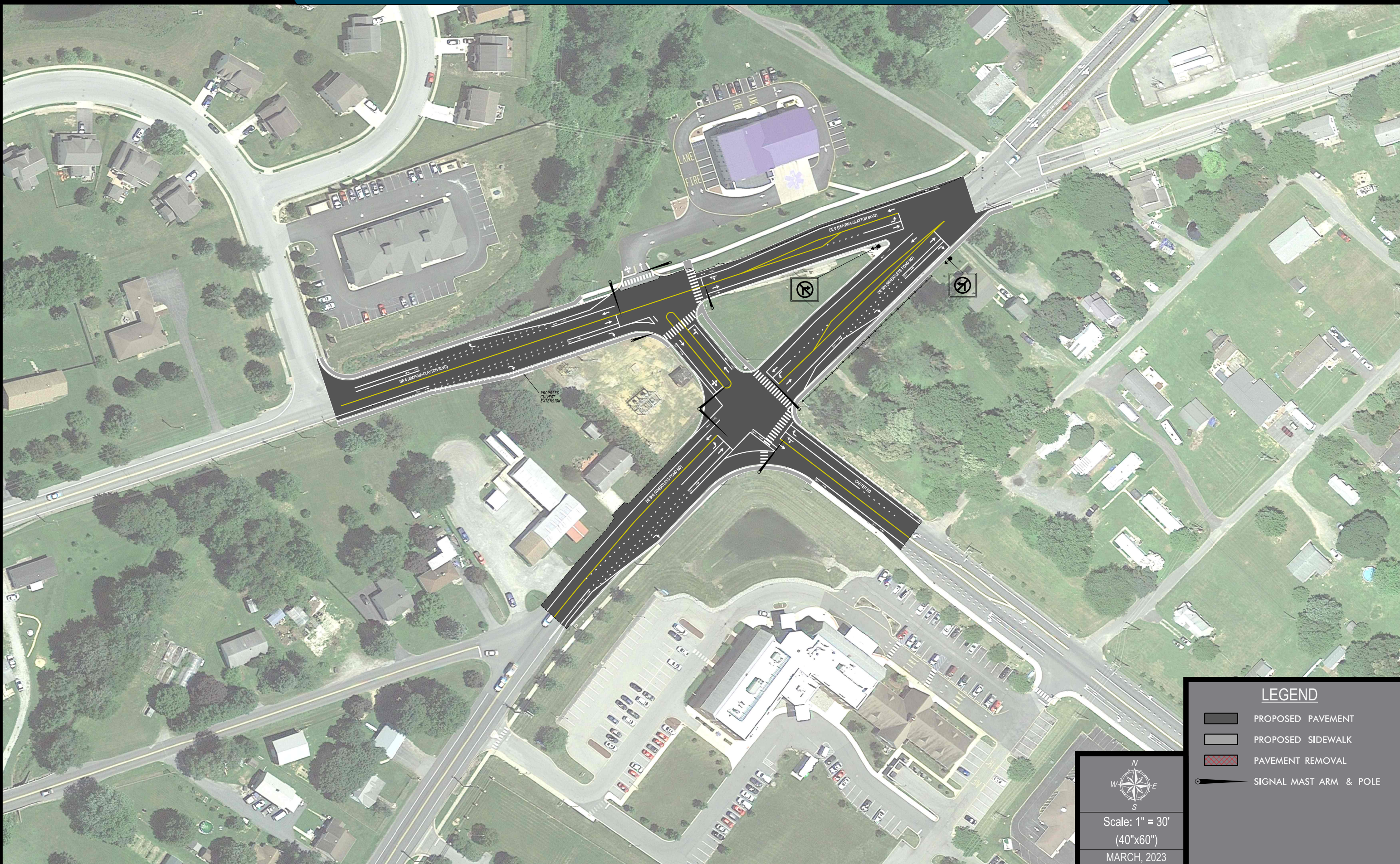
Thank You !

We really appreciate your time and feedback.



Appendix D: Concept Option 1 & Concept Option 2

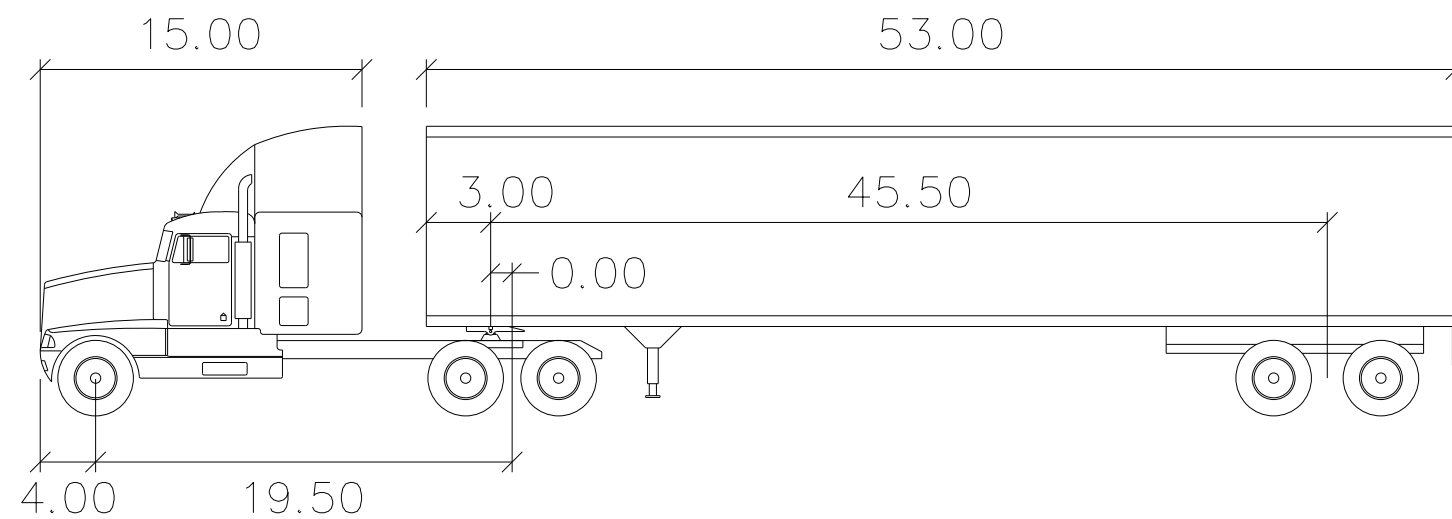
Smyrna Clayton Blvd Intersection Study Option 1



Smyrna Clayton Blvd Intersection Study Option 2



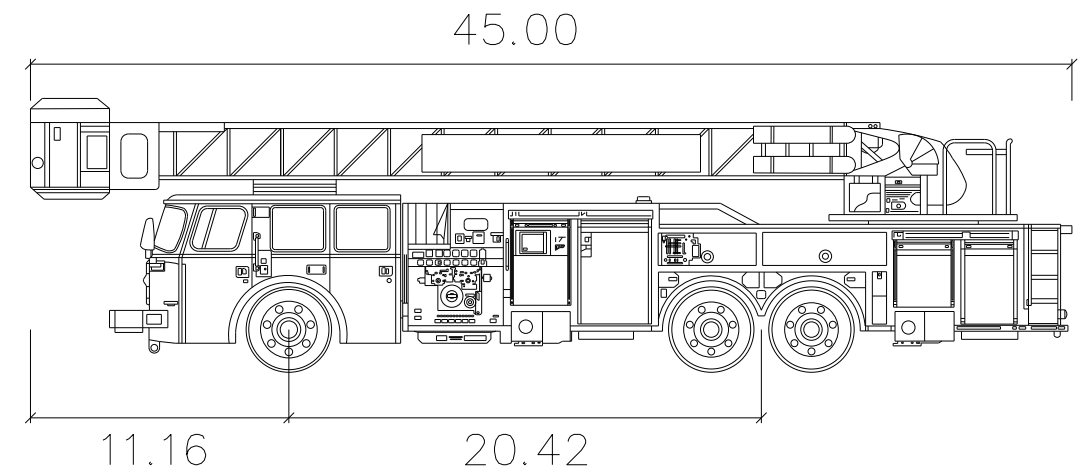
Appendix E: Turning Templates – Concept Option 2



WB-67

feet

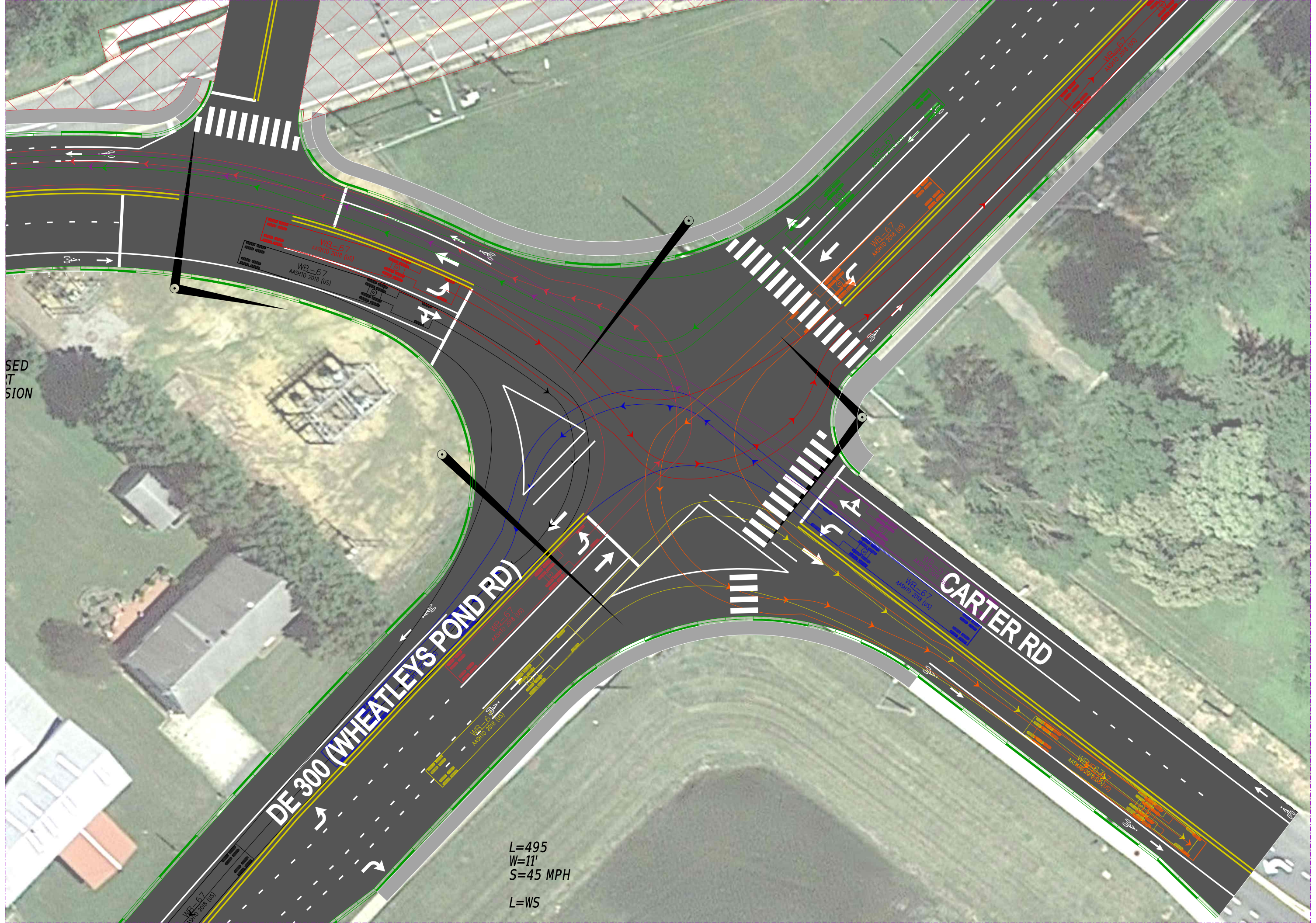
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		



E-One Cyclone II 95 HP

feet

Width	: 9.50
Track	: 9.35
Lock to Lock Time	: 6.0
Steering Angle	: 43.4



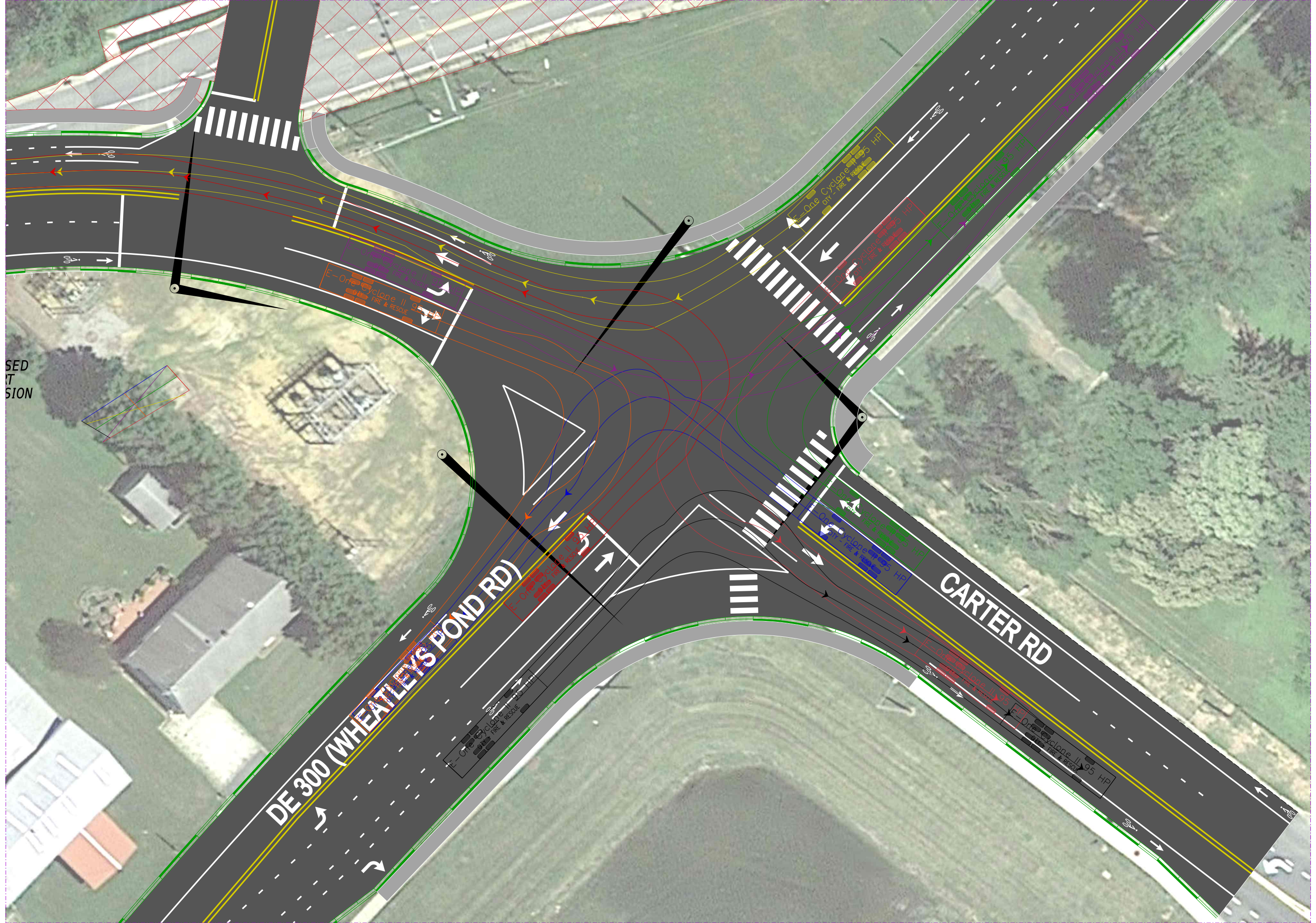
SED
T
SION

DE 300 (WHEATLEYS POND RD)

CARTER RD

L=495
W=11'
S=45 MPH
L=WS





SED
T
SION

DE 300 (WHEATLEYS POND RD)

CARTER RD

E-One Cyclone II 95 HP
Fire & Rescue

E-One Cyclone II 95 HP
Fire & Rescue

E-One Cyclone II 95 HP
Fire & Rescue

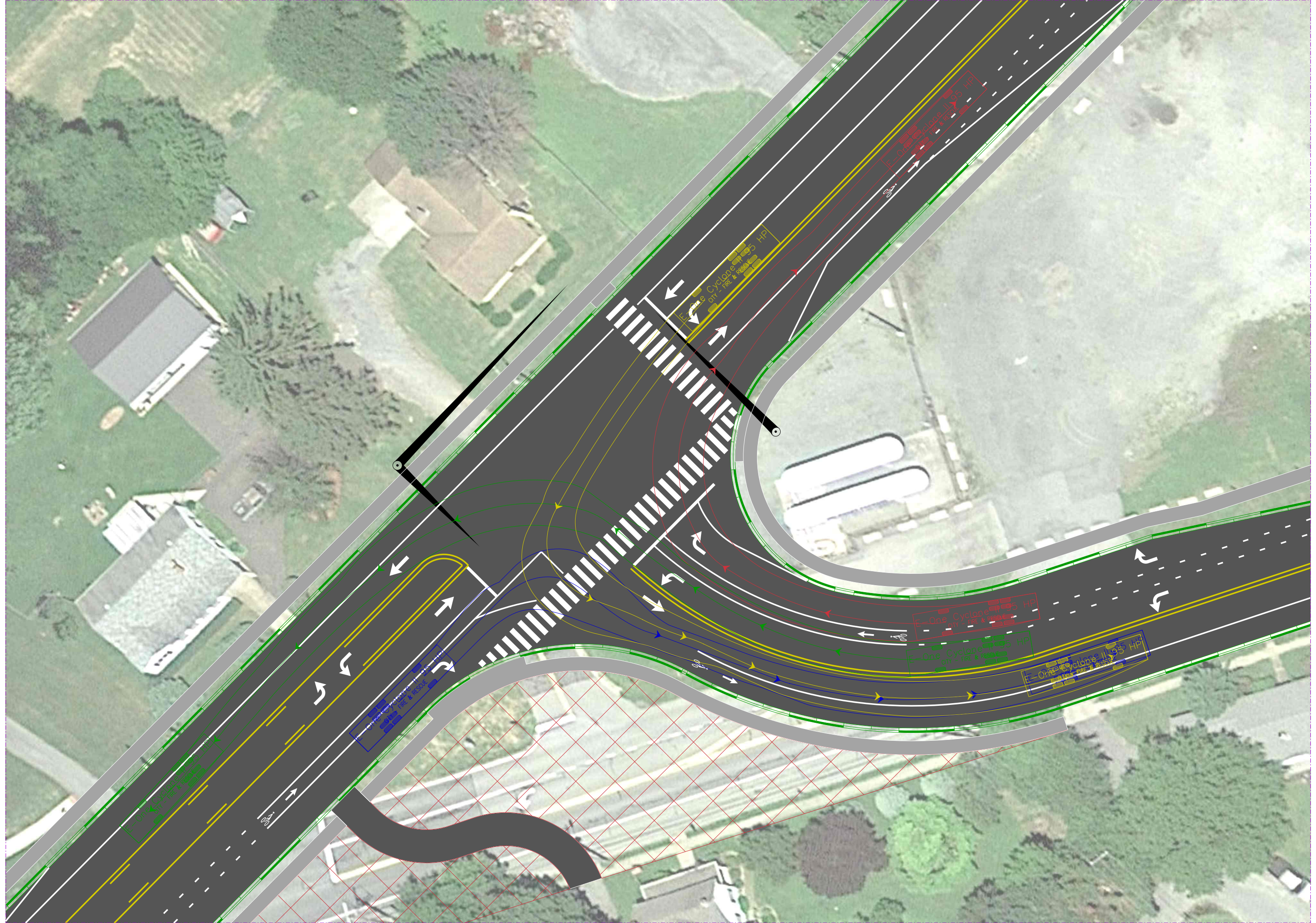
E-One Cyclone II 95 HP
Fire & Rescue

E-One Cyclone II 95 HP
Fire & Rescue

E-One Cyclone II 95 HP
Fire & Rescue

E-One Cyclone II 95 HP
Fire & Rescue

E-One Cyclone II 95 HP
Fire & Rescue



Appendix F: Cost Estimates

Cost Estimate Summary

Contract No. Concept Option 1
Smyrna Clayton Blvd

	Funded Amount (CTP):	Current Estimate	% Difference
Preliminary Engineering	\$0.00	\$485,370.00	#DIV/0!
Right-of-Way	\$0.00	50,000.00	#DIV/0!
Total Construction	\$0.00	3,112,070.57	#DIV/0!

Contractor Items*	\$1,941,474.70		* From TrnsPort
Const. Contingency	\$388,294.94	@	20.00%
CE**	\$551,368.68	@	28.40%
Traffic	\$50,000.00		
Utilities	\$ 150,000.00		
Planting	\$20,000.00		
Env. Performance	\$ -		
QA/QC for HMA	\$470.05		
Asphalt Cost Adj	\$10,462.20		
Total Need:	\$3,112,070.57		

** CE costs consist of the following:

Advertisement	\$1,000.00
Construction inspection services	\$291,221.21
Construction engineering services	\$194,147.47
E&S Inspection services	\$63,000.00
Pipe Video Inspection Services	\$0.00
Materials and Research Insp. Services	\$2,000.00
Misc. Construction Items	\$0.00

Primavera Estimate Data

Preliminary Engineering	\$485,370.00
Right-of-Way	\$50,000.00
Construction	\$3,112,070.57
Contingency	\$399,227.19

Smyrna Clayton Blvd

Concept Option 1

Preliminary 5/31/2023

ITEM #	TITLE	UNIT	ESTIMATE COST	UNIT QUANTITY	TOTAL
201000	CLEARING AND GRUBBING	LS	\$10,000.00	1.00	\$10,000.00
202000	EXCAVATION AND EMBANKMENT	CY	\$20.00	1891.00	\$37,820.00
202003	UNDERCUT EXCAVATION	CY	\$23.00	379.00	\$8,717.00
207000	STRUCTURAL EXCAVATION	CY	\$15.00	196.00	\$2,940.00
209001	BORROW, TYPE A	CY	\$20.00	0.00	\$0.00
209005	FURNISHING BORROW, TYPE C FOR PIPE AND UTILITY TRENCH BACKFILL	CY	\$24.00	160.00	\$3,840.00
209006	BORROW, TYPE F	CY	\$12.00	0.00	\$0.00
211000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	\$10,000.00	1.00	\$10,000.00
211001	REMOVAL OF PORTLAND CEMENT CONCRETE PAVEMENT, CURB AND SIDEWALK	SY	\$28.00	770.00	\$21,560.00
301001	GRADED AGGREGATE BASE COURSE, TYPE B	CY	\$65.00	632.00	\$41,080.00
301002	GRADED AGGREGATE BASE COURSE, TYPE B, PATCHING	CY	\$95.00	85.00	\$8,075.00
401014	SUPERPAVE TYPE B, PG 64-22	TON	\$100.00	617.00	\$61,700.00
401030	SUPERPAVE TYPE B, PG 64-22, PATCHING	TON	\$140.00	11.00	\$1,540.00
401036	SUPERPAVE TYPE C, PG 64-22, WEDGE	TON	\$150.00	0.00	\$0.00
401044	SUPERPAVE TYPE C, PG 64-22 (NON-CARBONATE STONE)	TON	\$110.00	1332.00	\$146,520.00
601033	REINFORCED CONCRETE PIPE, 18", CLASS IV	LF	\$95.00	335.00	\$31,825.00
602004	DRAINAGE INLET, 48" X 30"	EACH	\$4,200.00	5.00	\$21,000.00
602067	CONVERTING DRAINAGE INLET TO JUNCTION BOX		\$2,200.00	3.00	\$6,600.00
602130	ADJUSTING AND REPAIRING EXISTING DRAINAGE INLET	EACH	\$1,800.00	20.00	\$36,000.00
602132	ADJUSTING AND REPAIRING EXISTING MANHOLE	EACH	\$1,800.00	2.00	\$3,600.00
701013	PORTLAND CEMENT CONCRETE CURB, TYPE 1-8	LF	\$30.00	0.00	\$0.00
701014	PORTLAND CEMENT CONCRETE CURB, TYPE 2	LF	\$25.00	0.00	\$0.00
701023	INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 3-8	LF	\$35.00	3014.00	\$105,490.00
705001	PORTLAND CEMENT CONCRETE SIDEWALK, 4"	SF	\$12.00	7282.00	\$87,384.00
705002	PORTLAND CEMENT CONCRETE SIDEWALK, 6"	SF	\$14.00	0.00	\$0.00
705005	PORTLAND CEMENT CONCRETE SIDEWALK, 8"	SF	\$16.00	0.00	\$0.00
705007	SIDEWALK SURFACE DETECTABLE WARNING SYSTEM	SF	\$38.00	176.00	\$6,688.00
705008	PEDESTRIAN CONNECTION, TYPE 1	SF	\$15.50	1320.00	\$20,460.00
710002	ADJUST WATER VALVE BOXES	EACH	\$450.00	5.00	\$2,250.00
710041	RELOCATING FIRE HYDRANT	EACH	\$7,500.00	0.00	\$0.00
720022	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 2-31	LF	\$45.00	240.00	\$10,800.00
727000	CHAIN LINK FENCE	LF	\$60.00	100.00	\$6,000.00
727005	DECORATIVE FENCE	LF	\$100.00	160.00	\$16,000.00
760010	PAVEMENT MILLING, BITUMINOUS CONCRETEPAVEMENT	SYIN	\$2.50	19910.00	\$49,775.00
762000	SAW CUTTING, BITUMINOUS CONCRETE	LF	\$3.00	2283.00	\$6,849.00
762001	SAW CUTTING, CONCRETE, FULL DEPTH	LF	\$15.00	21.00	\$315.00
801000	MAINTENANCE OF TRAFFIC	LS	\$150,000.00	1.00	\$150,000.00
817002	PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND, ALKYD- THERMOPLASTIC	SF	\$6.00	1650.00	\$9,900.00
817003	TEMPORARY MARKINGS, PAINT, 4"	LF	\$0.55	0.00	\$0.00
817004	TEMPORARY MARKINGS, PAINT, SYMBOL/LEGEND	SF	\$4.00	0.00	\$0.00
817005	PERMANENT PAVEMENT STRIPING, ALKYD-THERMOPLASTIC, 5"	LF	\$5.00	0.00	\$0.00
817015	PREFORMED RETROREFLECTIVE THERMOPLASTIC MARKINGS, BIKE SYMBOL	EACH	\$400.00	19.00	\$7,600.00
817042	PERMANENT PAVEMENT STRIPING, ALKYD-THERMOPLASTIC, 6"	LF	\$1.50	8550.00	\$12,825.00
817043	PERMANENT PAVEMENT STRIPING, ALKYD-THERMOPLASTIC, 12"	LF	\$3.00	0.00	\$0.00
818001	SUPPLY OF FLAT SHEET ALUMINUM SIGN PANEL, TYPE IV, RETROREFLECTIVE SHEETING		\$30.00	18.00	\$540.00
818003	SUPPLY OF FLAT SHEET ALUMINUM SIGN PANEL, TYPE XI, RETROREFLECTIVE SHEETING		\$30.00	0.00	\$0.00
819011	GALVANIZED TELESCOPING STEEL SIGN POSTS, 12' X 2", COMPLETE W/ BASEPOSTS AND HARDWARE		\$175.00	0.00	\$0.00
819018	INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON SINGLE SIGN POST	EACH	\$110.00	2.00	\$220.00
819019	INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON MULTIPLE SIGN POSTS	SF	\$22.00	0.00	\$0.00
905001	SILT FENCE	LF	\$4.00	0.00	\$0.00
905004	INLET SEDIMENT CONTROL, DRAINAGE INLET	EACH	\$200.00	8.00	\$1,600.00
905005	INLET SEDIMENT CONTROL, CURB INLET	EACH	\$200.00	20.00	\$4,000.00
907017	COMPOST FILTER LOGS	LF	\$24.00	0.00	\$0.00
908004	TOPSOIL, 6" DEPTH	SY	\$4.50	1584.00	\$7,128.00
908017	TEMPORARY GRASS SEEDING	SY	\$0.75	0.00	\$0.00
908020	EROSION CONTROL BLANKET MULCH	SY	\$4.00	1584.00	\$6,336.00
908023	STABILIZED CONSTRUCTION ENTRANCE	SY	\$75.00	0.00	\$0.00
999999	SIGNALS	EACH	\$300,000.00	1.00	\$300,000.00
999999	CULVERT EXTENSION	LS	\$500,000.00	1.00	\$500,000.00
	Subtotal				\$1,764,977.00
763000	Initial Expense (5%)	L.S.	\$88,248.85	1	\$88,248.85
763501	Construction Engineering (5%)	L.S.	\$88,248.85	1	\$88,248.85
	TOTAL BASE FOR PROJECT				\$1,941,474.70
	CONSTRUCTION CONTINGENCY	L.S.	\$388,294.94	1	\$388,294.94
	TRAFFIC (FROM TRAFFIC STATEMENT)	L.S.	\$50,000.00	1	\$50,000.00
	UTILITY	L.S.	\$150,000.00	1	\$150,000.00
	PLANTING	L.S.	\$20,000.00	1	\$20,000.00
	QA/QC for HMA	L.S.	\$470.05	1	\$470.05
	Asphalt Cost Adj	L.S.	\$10,462.20	1	\$10,462.20
	CONSTRUCTION ENGINEERING - (INSPECTION, CE, ETC)	L.S.	\$551,368.68	1	\$551,368.68
	TOTAL CONSTRUCTION COST				\$3,112,070.57
	PROJECT DEVELOPMENT		\$194,150.00	1	\$194,150.00
	PRELIMINARY ENGINEERING (DESIGN)		\$291,220.00	1	\$291,220.00
	ROW COSTS		\$50,000.00	1	\$50,000.00
	TOTAL COST				\$3,647,440.57

- Notes:
1. All MOT items included in Item 801000 for this estimate. Breakouts of individual items will be included in the semi-final cost estimate.
 2. Assumes 400 Calendar Days.

Cost Estimate Summary

Contract No. Concept Option 2
Smyrna Clayton Blvd

	Funded Amount (CTP):	Current Estimate	% Difference
Preliminary Engineering		\$929,140.00	
Right-of-Way		\$250,000.00	
Total Construction		\$5,694,379.33	

Contractor Items*	\$3,716,553.50		* From TrnsPort
Const. Contingency	\$743,310.70	@	20.00%
CE**	\$995,138.38	@	26.78%
Traffic	\$50,000.00		
Utilities	\$150,000.00		
Planting	\$20,000.00		
Env. Performance	\$0.00		
QA/QC for HMA	\$836.15		
Asphalt Cost Adj	\$18,540.60		
Total Need:	\$5,694,379.33		

** CE costs consist of the following:

Advertisement	\$1,000.00
Construction inspection services	\$557,483.03
Construction engineering services	\$371,655.35
E&S Inspection services	\$63,000.00
Pipe Video Inspection Services	\$0.00
Materials and Research Insp. Services	\$2,000.00
Misc. Construction Items	\$0.00

Primavera Estimate Data

Preliminary Engineering	\$929,140.00
Right-of-Way	\$250,000.00
Construction	\$5,694,379.33

Smyrna Clayton Blvd

Concept Option 2

Preliminary 5/31/2023

ITEM #	TITLE	UNIT	ESTIMATE COST	UNIT QUANTITY	TOTAL
201000	CLEARING AND GRUBBING	LS	\$20,000.00	1.00	\$20,000.00
202000	EXCAVATION AND EMBANKMENT	CY	\$20.00	4424.00	\$88,480.00
202003	UNDERCUT EXCAVATION	CY	\$23.00	885.00	\$20,355.00
207000	STRUCTURAL EXCAVATION	CY	\$15.00	787.00	\$11,805.00
209001	BORROW, TYPE A	CY	\$20.00	0.00	\$0.00
209005	FURNISHING BORROW, TYPE C FOR PIPE AND UTILITY TRENCH BACKFILL	CY	\$24.00	643.00	\$15,432.00
209006	BORROW, TYPE F	CY	\$12.00	0.00	\$0.00
211000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	\$25,000.00	1.00	\$25,000.00
211001	REMOVAL OF PORTLAND CEMENT CONCRETE PAVEMENT, CURB AND SIDEWALK	SY	\$28.00	3674.00	\$102,872.00
301001	GRADED AGGREGATE BASE COURSE, TYPE B	CY	\$65.00	1406.00	\$91,390.00
301002	GRADED AGGREGATE BASE COURSE, TYPE B, PATCHING	CY	\$95.00	338.00	\$32,110.00
401014	SUPERPAVE TYPE B, PG 64-22	TON	\$100.00	1222.00	\$122,200.00
401030	SUPERPAVE TYPE B, PG 64-22, PATCHING	TON	\$140.00	78.00	\$10,920.00
401036	SUPERPAVE TYPE C, PG 64-22, WEDGE	TON	\$150.00	0.00	\$0.00
401044	SUPERPAVE TYPE C, PG 64-22 (NON-CARBONATE STONE)	TON	\$110.00	2311.00	\$254,210.00
601033	REINFORCED CONCRETE PIPE, 18", CLASS IV	LF	\$95.00	1347.00	\$127,965.00
602004	DRAINAGE INLET, 48" X 30"	EACH	\$4,200.00	18.00	\$75,600.00
602130	ADJUSTING AND REPAIRING EXISTING DRAINAGE INLET	EACH	\$1,800.00	12.00	\$21,600.00
602132	ADJUSTING AND REPAIRING EXISTING MANHOLE	EACH	\$1,800.00	2.00	\$3,600.00
701013	PORTLAND CEMENT CONCRETE CURB, TYPE 1-8	LF	\$30.00	0.00	\$0.00
701014	PORTLAND CEMENT CONCRETE CURB, TYPE 2	LF	\$25.00	0.00	\$0.00
701023	INTEGRAL PORTLAND CEMENT CONCRETE CURB AND GUTTER, TYPE 3-8	LF	\$35.00	6270.00	\$219,450.00
705001	PORTLAND CEMENT CONCRETE SIDEWALK, 4"	SF	\$12.00	35316.00	\$423,792.00
705002	PORTLAND CEMENT CONCRETE SIDEWALK, 6"	SF	\$14.00	1613.00	\$22,582.00
705005	PORTLAND CEMENT CONCRETE SIDEWALK, 8"	SF	\$16.00	0.00	\$0.00
705007	SIDEWALK SURFACE DETECTABLE WARNING SYSTEM	SF	\$38.00	264.00	\$10,032.00
705008	PEDESTRIAN CONNECTION, TYPE 1	SF	\$15.50	1980.00	\$30,690.00
710002	ADJUST WATER VALVE BOXES	EACH	\$450.00	6.00	\$2,700.00
710041	RELOCATING FIRE HYDRANT	EACH	\$7,500.00	3.00	\$22,500.00
720022	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 2-31	LF	\$45.00	264.00	\$11,880.00
727000	CHAIN LINK FENCE	LF	\$60.00	110.00	\$6,600.00
727005	DECORATIVE FENCE	LF	\$100.00	176.00	\$17,600.00
760010	PAVEMENT MILLING, BITUMINOUS CONCRETEPAVEMENT	SYIN	\$2.50	32050.00	\$80,125.00
762000	SAW CUTTING, BITUMINOUS CONCRETE	LF	\$3.00	6468.00	\$19,404.00
762001	SAW CUTTING, CONCRETE, FULL DEPTH	LF	\$15.00	66.00	\$990.00
801000	MAINTENANCE OF TRAFFIC	LS	\$250,000.00	1.00	\$250,000.00
817002	PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND, ALKYD- THERMOPLASTIC	SF	\$6.00	2664.00	\$15,984.00
817003	TEMPORARY MARKINGS, PAINT, 4"	LF	\$0.55	0.00	\$0.00
817004	TEMPORARY MARKINGS, PAINT, SYMBOL/LEGEND	SF	\$4.00	0.00	\$0.00
817005	PERMANENT PAVEMENT STRIPING, ALKYD-THERMOPLASTIC, 5"	LF	\$5.00	0.00	\$0.00
817015	PREFORMED RETROREFLECTIVE THERMOPLASTIC MARKINGS, BIKE SYMBOL	EACH	\$400.00	20.00	\$8,000.00
817042	PERMANENT PAVEMENT STRIPING, ALKYD-THERMOPLASTIC, 6"	LF	\$1.50	13035.00	\$19,552.50
817043	PERMANENT PAVEMENT STRIPING, ALKYD-THERMOPLASTIC, 12"	LF	\$3.00	0.00	\$0.00
818001	SUPPLY OF FLAT SHEET ALUMINUM SIGN PANEL, TYPE IV, RETROREFLECTIVE SHEETING	SF	\$30.00	75.00	\$2,250.00
818003	SUPPLY OF FLAT SHEET ALUMINUM SIGN PANEL, TYPE XI, RETROREFLECTIVE SHEETING	SF	\$30.00	75.00	\$2,250.00
819011	GALVANIZED TELESCOPING STEEL SIGN POSTS, 12' X 2", COMPLETE W/ BASEPOSTS AND HARDW	EACH	\$175.00	10.00	\$1,750.00
819018	INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON SINGLE SIGN POST	EACH	\$110.00	15.00	\$1,650.00
819019	INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON MULTIPLE SIGN POSTS	SF	\$22.00	0.00	\$0.00
905001	SILT FENCE	LF	\$4.00	0.00	\$0.00
905004	INLET SEDIMENT CONTROL, DRAINAGE INLET	EACH	\$200.00	18.00	\$3,600.00
905005	INLET SEDIMENT CONTROL, CURB INLET	EACH	\$200.00	12.00	\$2,400.00
907017	COMPOST FILTER LOGS	LF	\$24.00	0.00	\$0.00
908004	TOPSOIL, 6" DEPTH	SY	\$4.50	9337.00	\$42,016.50
908017	TEMPORARY GRASS SEEDING	SY	\$0.75	0.00	\$0.00
908020	EROSION CONTROL BLANKET MULCH	SY	\$4.00	9337.00	\$37,348.00
908023	STABILIZED CONSTRUCTION ENTRANCE	SY	\$75.00	0.00	\$0.00
999999	SIGNALS	EACH	\$300,000.00	2.00	\$600,000.00
999999	CULVERT EXTENSION	LS	\$500,000.00	1.00	\$500,000.00
	Subtotal				\$3,378,685.00
763000	Initial Expense (5%)	L.S.	\$168,934.25	1	\$168,934.25
763501	Construction Engineering (5%)	L.S.	\$168,934.25	1	\$168,934.25
	TOTAL BASE FOR PROJECT				\$3,716,553.50
	CONSTRUCTION CONTINGENCY	L.S.	\$743,310.70	1	\$743,310.70
	TRAFFIC (FROM TRAFFIC STATEMENT)	L.S.	\$50,000.00	1	\$50,000.00
	UTILITY	L.S.	\$150,000.00	1	\$150,000.00
	PLANTING	L.S.	\$20,000.00	1	\$20,000.00
	QA/QC for HMA	L.S.	\$836.15	1	\$836.15
	Asphalt Cost Adj	L.S.	\$18,540.60	1	\$18,540.60
	CONSTRUCTION ENGINEERING - (INSPECTION, CE, ETC)	L.S.	\$995,138.38	1	\$995,138.38
	TOTAL CONSTRUCTION COST				\$5,694,379.33
	PROJECT DEVELOPMENT		\$371,660.00	1	\$371,660.00
	PRELIMINARY ENGINEERING (DESIGN)		\$557,480.00	1	\$557,480.00
	ROW COSTS		\$250,000.00	1	\$250,000.00
	TOTAL COST				\$6,873,519.33

- Notes:
1. All MOT items included in Item 801000 for this estimate. Breakouts of individual items will be included in the semi-final cost estimate.
 2. Assumes 400 Calendar Days.